SOUTHERN POWER AND INDUSTRY

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APRIL, 1957

SPI . . . 54th Year

REACHES industrial plants (manufacturing, process, utility and large service) in the South & Southwest.

SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

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HANDLING WOOD WASTE can be done without stoppage if design is correct — Virginia Engineer Tells How 40

SAFE CONTROLS are essential in coal-to-gas conversion — North Carolina Example 44

REFRIGERATION plant is kept young by continuous modernization and addition of new controls 46

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ONE-TON TEST

proves physical strength of "Integrated" field coils in ALLIS-CHALMERS MOTORS

It's not likely a field coil of a motor would ever be punished this way. But tests like this illustrate the inherent ability of Allis-Chalmers "INTEGRATED" FIELD COILS to withstand the stresses created by the most severe loading conditions of a motor.

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"Integrated" field coils, available only on Allis-Chalmers motors, are enveloped in oriented glass fibers and heat-stabilized resins. These are securely locked to poles to resist mechanical force. High dimensional stability and tensile strength characteristics assure long life under the toughest of operating conditions.

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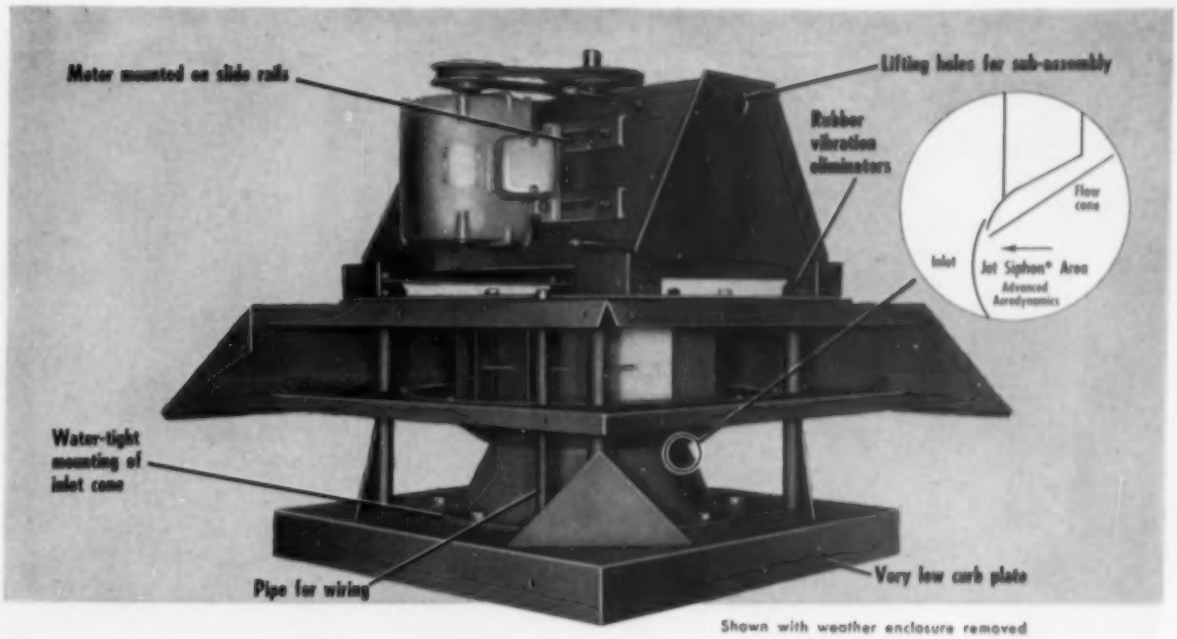
Volume 75 Number 4



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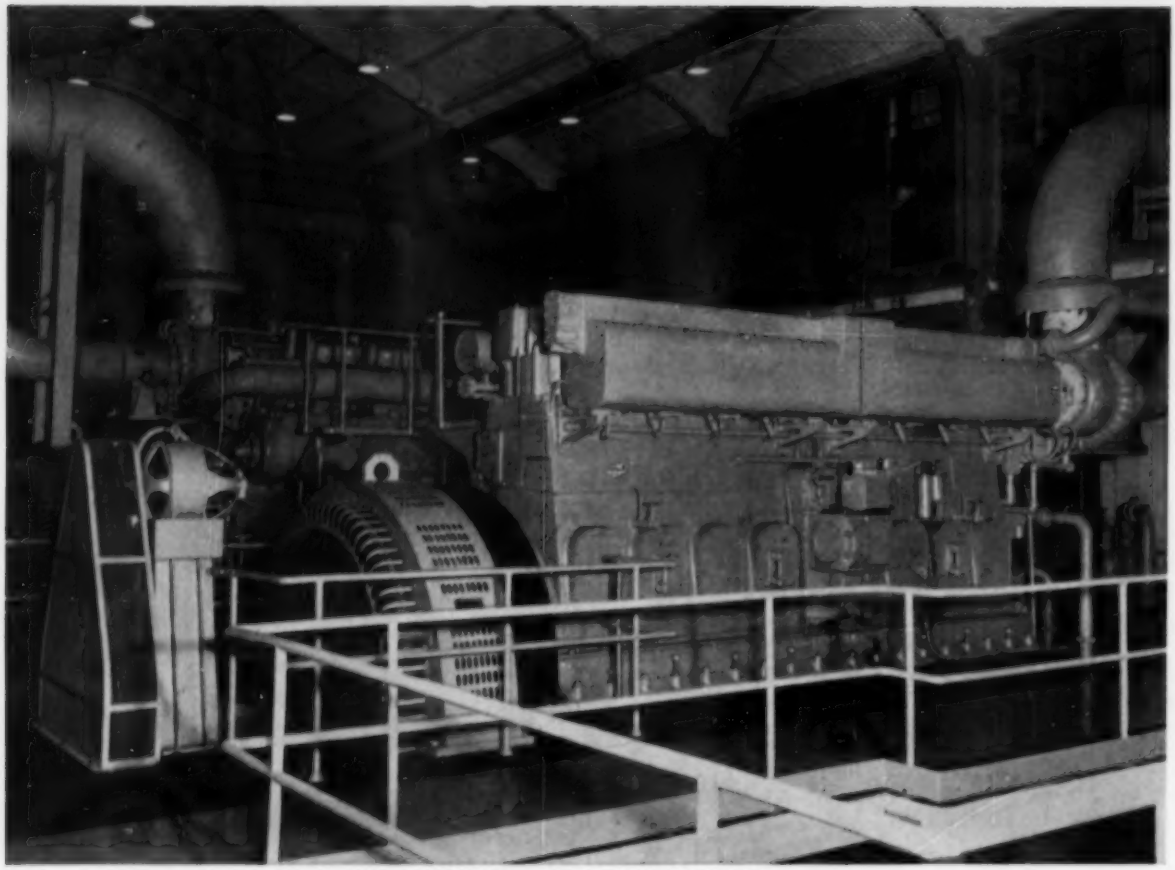

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SOUTHERN POWER AND INDUSTRY

Vol. 75
No. 4

APRIL, 1957

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Facts and Trends

FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

April 1, 1957

◆ STATIC SWITCHING—a new tool for industrial control systems—was featured in SPI for March—pages 46-50. Discussion highlighted what it is . . what it looks like . . how it works . . and advantages over relay control.

Static switching units cost more and are not intended to be complete replacements of control relays, but they offer a much higher degree of reliability and much longer life. There are no moving or wearing parts. General Electric's Bulletin GEA-6364 describes this element for industrial control systems. Circle No. 206 on SPI's Reader Service Post Card for your free copy.

◆ DRAINING CORROSIVE LIQUIDS—Spent acids and other liquid wastes of industry are being drawn off more economically in polyvinyl chloride piping. Changes in direction are made with socket type solvent welding drainage fittings. The plastic piping is replacing cast iron and ceramic lines, which employ conventional bell and spigot fittings, where corrosive solutions are conveyed at low pressures.

Reasons for the switch include: PVC plastic pipe and most fittings cost less, less labor per joint, fewer tools and materials needed, fewer joints required, useless deadweight eliminated, no losses due to breakage, and piping is not subject to galvanic or electrolytic action.

◆ BATTERIES—More Power in Less Space. The Exide Div. of the Electric Storage Battery Co., claims the highest ampere-hour per cubic-inch rating on the motive power market—72 ampere-hours per positive plate.

Key to new battery design is use of armored porous tubing to encase grid spines and active material of positive battery plates. Tubing acts like a cigarette filter, facilitating electrochemical action.

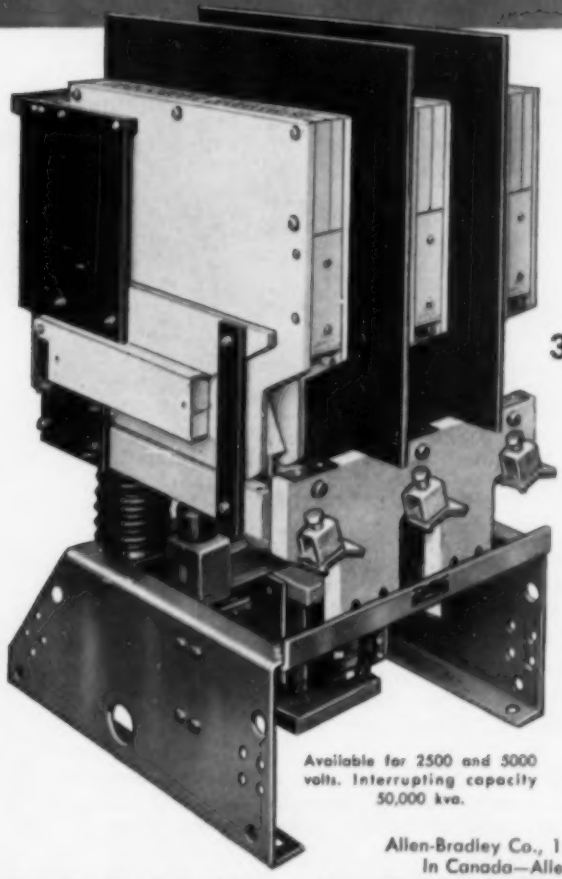
◆ HERMETIC COMPRESSORS from 10 thru 60 hp by Carrier will reduce cost, size and weight of air conditioning installations in this size range. Design eliminates "open drives" employing belt and pulley, a gear box, or other couplings. Compressor and motor are single shaft mounted, and hermetically closed sealing keeps out dust and dirt. Installation work and cost is reduced, space requirements are cut and life of equipment is lengthened.

◆ SPI's 11th ANNUAL PLANT MAINTENANCE ISSUE will be in your office on May 1 presenting "plant-tested" procedures to reduce maintenance costs, save materials and improve operations.

You and other engineers in manufacturing, power and large service plants throughout the South and Southwest set the pattern of this issue, reporting on proved maintenance procedures.

Few of you will find it profitable to study every article—but if you will spin the pages, and read the titles and subtitles, you are sure to find one, two—or a dozen ideas that will help you improve maintenance in your own plant.

NEW Development in High Voltage Air Break Contactors



34½"

Available for 2500 and 5000 volts. Interrupting capacity 50,000 kva.

Here's a brand new high voltage contactor . . . incorporating the same design simplicity on which the "Quality" reputation of Allen-Bradley motor control is based. Like the Allen-Bradley control having a rating of 600 volts a-c maximum, the new 5000-volt air break switch is of the solenoid type, has only one moving part, and thus, is assured a mechanical life of millions of operations. The silver alloy contacts are also double break, and remain in perfect operating condition irrespective of the frequency of operation or whether they are used in reversing or jogging service.

NOTE THESE FEATURES—

- **ONLY ONE MOVING PART**—Simple solenoid design eliminates all pins, pivots, and flexible "jumpers."
- **COMPACT**—Unique design and development in new materials made possible a switch of unusually small size.
- **DOUBLE BREAK, SILVER ALLOY CONTACTS**—Require no maintenance. There are no flexible jumpers. Straight up-and-down motion assures good uniform contact pressures.
- **EASY ACCESS FROM FRONT**—Easy to inspect. Routine maintenance operations require no special tools.
- **FASTER ARC SUPPRESSION**—Double break contacts, new blowout design, and novel arc chute assure rapid arc extinction.

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SAN DIEGO—James A. Satchell Co., Inc., 301 W. "G" St., Tel: BEImont 3-3981
TULSA—John W. Elder Co., 1526 East Fourth St., Tel: Diamond 3-9149

Facts and trends *(continued from page 4)*

◆ TEFLON, a preparation of the plastic polytetrafluoroethylene, has shown its versatility as a dry lubricant and preservative for metals in Marine Corps tests of weapons coated with the material.

It is applied as a water suspensoid by air or electrostatic spray, and air dried. The coatings were found to provide suitable protection for weapons in long-term storage despite a total lack of care, as well as affording lubrication for small arms under all circumstances for an almost indefinite period.

◆ COSTLY WASTE WATER PROGRAMS can sometimes be made to pay off in improvements to product quality, reduction of direct and indirect water costs, improvement of process methods, and reduction of water consumption.

Recently, a large tissue manufacturing plant was polluting a river with white water-borne wastes. A way was found for the plant not only to comply with state requirements but also to realize large "bonus benefits" thru 95% recovery of re-usable fibers and more effective use, recovery, and re-use of water.

If you are confronted with a waste water problem, start at the point of origin and follow thru all the processes from which water-borne wastes originate. Only after you have exhausted all efforts to forestall, minimize, or recover wastes should you consider treatment of waste water.

◆ DUST-RESISTANT TRUCKS by Lewis-Shepard are protected against the effects of metal, coal, coke, grain dust, carbon black, etc. Traction and pump motors are totally enclosed, starting and first speed resistors are mounted in gasketed compartment, main contractors and timing device are tightly enclosed, and main power circuit conductors are neoprene insulated.

◆ PUMPS—Three basic lessons on the Plant Application of Pumps were recently published in SPI—Part 1 defined absolute pressure and vapor pressures; Part 2 explained cavitation and showed how it is caused and controlled by variations in NPSH; and Part 3 shows how to calculate the value of NPSH (net positive suction head).

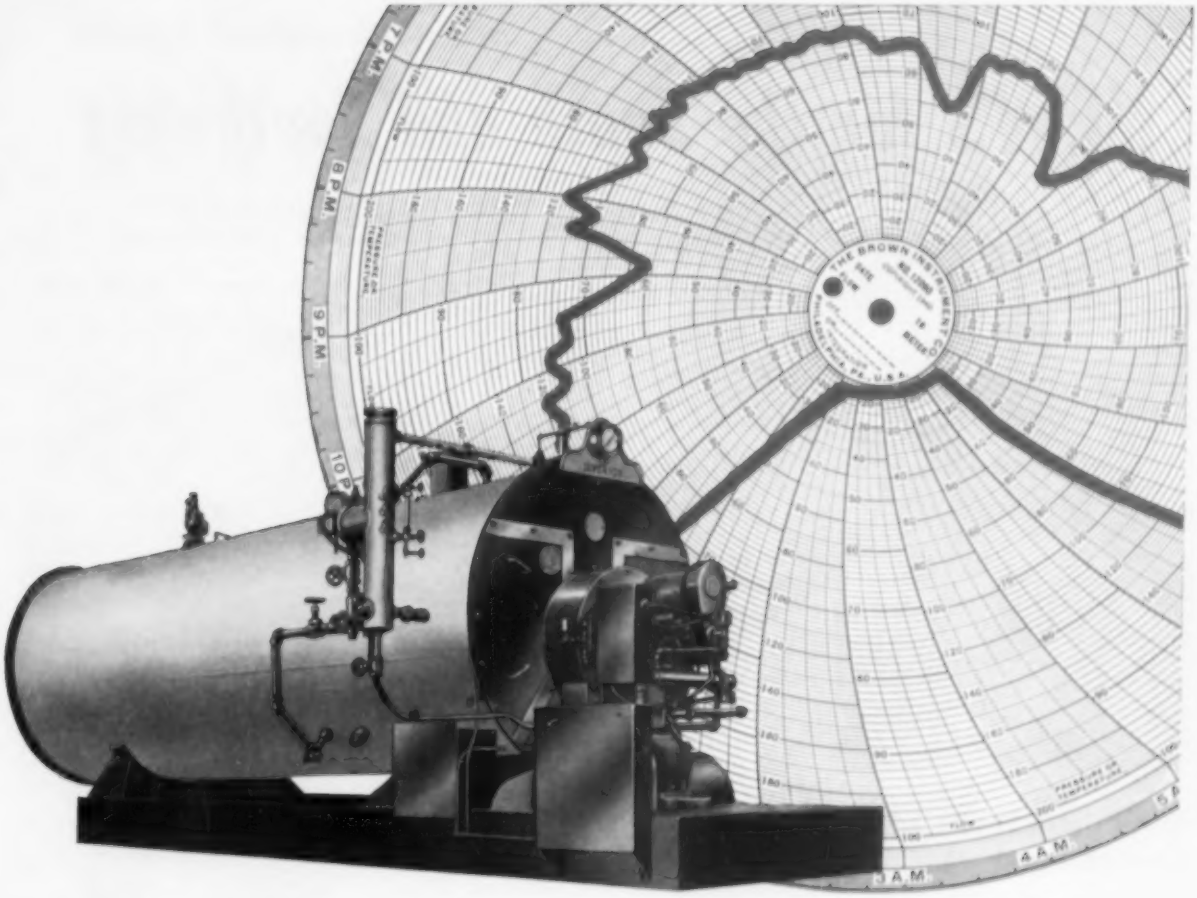
Until the supply is exhausted, free reprints are available to SPI readers. Use the Reader Service Post Card or write SPI, 806 Peachtree St., N.E., Atlanta 8, Georgia.

◆ ATOMICS—Star gazing and stark reality have at times seemed to constitute opposite poles of the atomic energy prospect. Practical progress is being made, however, and economic power production seems a certainty.

Physicists are still shooting for the ultimate goal—electricity directly from fission or fusion. But engineers are going right ahead with plans to take heat (any way they can get it) and convert it to electricity in a more or less conventional steam turbine cycle.

◆ COAL-TO-GAS CONVERSION at Wisteria Hosiery Mills in North Carolina enabled plant engineers to solve several problems. Installation (see pages 44-45) features entirely automatic combustion control by the use of electronic gas combustion safeguards.

Write the editors for additional information on any of the above items. SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 8, Ga.



for Sharply Fluctuating Steam Demands . . .

Superior Steam Generators provide greater reserve

Check these design features:

- *Completely integrated design.*
- *5 sq. ft. of heating surface per b.h.p.*
- *Built-in induced draft.*
- *Fully automatic firing.*
- *Burns oil, gas or both.*
- *"Sized-to-capacity" boiler shells.*

Designed with a large shell diameter and low water line, Superior Steam Generators provide extra steam storage space to meet sudden demands for steam. This feature makes Superior Steam Generators ideal for installations where steam requirements fluctuate sharply. The extra steam stored in the large boiler shell is immediately available as the need arises without the delay of waiting until the boiler catches up with the increased load.

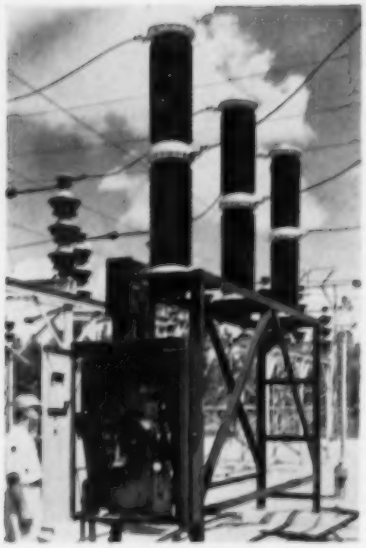
Superior Steam Generators are available as completely integrated packages in sizes ranging from 20 to 600 b.h.p. for pressures up to 250 p.s.i. or for hot water. Before you buy, specify or recommend any boiler for new construction, or to replace or supplement existing equipment, learn the advantages of Superior Steam Generators. Write for Catalog 811F.

for performance you can **BANK** *on*

SUPERIOR COMBUSTION INDUSTRIES INC.
TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

SUPERIOR
STEAM GENERATORS

NEWS *for the South and Southwest*



Gas-Filled Power Circuit Breakers

These are three of the first experimental gas-filled (SF_6) power circuit breakers ever built. Developed by Westinghouse Electric Corporation, the 115-kv, 1000-mva breakers are installed on the **Gulf Power Company's** system's Pace substation, **Pensacola, Fla.,** to obtain performance data.

The breakers have a continuous current rating of 400 amperes rms, will interrupt in 5 cycles and reclose in less than 15 cycles. The SF_6 breaker is restrike free, which makes it particularly well adapted for switching capacitors, either single bank or bank against bank.

The gas has excellent insulation properties and is used at relatively low pressure (45 psig). A porcelain housing is used for the enclosure. The upper half of the porcelain-clad pole unit contains the interrupting device, and the lower half provides insulation to ground.

Three curved, double-armed, U-shaped moving contact castings are mounted on a rotating shaft and mate with six stationary contacts to provide a total of six breaks per phase. The breaks are formed within an insulating tube in which the stationary contacts are located and through which the arms of the moving contact pass. The short stroke and small amount of closing energy required of this breaker allows eleven closing operations without going below minimum closing pressure with the standard pneumatic operating mechanism.

Each pole unit is approximately 9 ft high by 1 ft wide and weighs approximately 1000 lb.

Raybestos-Manhattan—South & Southwest

An extensive reorganization of the field sales structure of the **Manhattan Rubber Packing Division** has been announced by **Raybestos-Manhattan, Inc.,** Passaic, New Jersey.

The introduction of new products and the expansion of the R/M field sales force to better serve expanding markets prompted the division of the country into four Sales Regions, each headed by a Regional Manager. These are supported by District Managers, responsible for supervision of field salesmen's activities. Included are: **C. P. Shook, Jr.,** Southern Regional Manager, with **A. A. Ringland** as Birmingham District Manager, **A. E. Jackson,** New Orleans District Manager, **E. W. Nagel,** Dallas District Manager, and **R. C. Nielson,** Houston District Manager.

Johnson—Tex. & Ga.

Johnson Service Company, manufacturers of automatic temperature control systems, has established new branch offices at **Fort Worth, Texas** and **Savannah, Georgia.**

The new offices bring to 101 the number of direct branch offices which engineer, install and service the company's automatic temperature and air conditioning control systems.

James R. Gaylor, formerly of the Atlanta branch, is in charge of the Savannah office.

R. C. Spangenberger is in charge of the Fort Worth branch. He was formerly with Johnson's Dallas office.

Conoflow Sales Manager

J. Robert Simpson, III, has been appointed sales manager for **Conoflow Corporation,** according to an announcement by John C. Koch, Conoflow's vice president in charge of marketing. Conoflow Corporation, a subsidiary of Walworth Company, is a manufacturer of final control elements.

Mendow is V.P.—Engineering for A. M. Lockett & Company

F. Robert Mendow has been appointed vice president—engineering, of **A. M. Lockett & Company, Ltd.,** according to Charles C. Crawford, President of the Company, which has offices in New Orleans, Houston, and Dallas.

Mr. Mendow has been with the Lockett Organization for the past 25 years. He was graduated from Tulane University in 1930 in Mechanical and Electrical Engineering. He joined the Lockett Company as a junior engineer. During the intervening period, he has filled various positions: starting as draftsman and design engineer, then contract estimator, field testing and service work. For several years, his major activity has been assisting in the promotion of boiler sales and engineering in the Lockett Division Offices. In 1952, he was appointed chief engineer, which position he held until his recent promotion to vice-president—engineering.

(*Continued on Page* 12)

Convince Yourself—Investigate

April Showers!

AUTOMATIC EVAPORATIVE ROOF COOLING

Aerial Photo of New Knoxville, Tennessee, Levi-Strauss Company Plant. 180,000 Sq. Ft. installed December, 1957.

J. H. Thomas & Associates, Architects

Joe Bailey, Mechanical Engineer

Kolthoff Heating Company, Air Conditioning Contr.

240 Tons of Air Conditioning in conjunction with an April Showers Automatic Roof Spray System, saved 150 Tons of Refrig. capacity initially, and proportionate operating expense.

NATURE'S ORIGINAL COOLING METHOD IS NOW SCIENTIFICALLY APPLIED TO THE SOLAR HEAT LOAD PROBLEM.

10 POINTS!

1 — Many Millions of Square Feet in Use.

2 — A Boon to Southern Manufacturers.

3 — Reduces Fire Hazards — Dispenses with Roof Dust.

4 — Roof Dry Bulb Temperatures Reduced to Within 8 Degrees of Existing Wet Bulb.

5 — Inexpensive to Buy and Operate — Fool Proof.

6 — A First Step Toward Complete Air Conditioning.

7 — Reduces Inside Temperature 8° to 15° Without Air Conditioning.

8 — Doubles to Trebles "Built-up" Roof Life.

9 — Any Type or Design of Roof.

10 — Drop a Line to Us for the Full Story.

We operate under authority of
Leonard H. Holder — Patentee & Pres.
April Showers Co., Inc.
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Typical Customers

Lilly Tulip Cup Corp.	Multiple Systems
Westinghouse Electric Company	"
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E. I. du Pont de Nemours & Co., Inc.	"
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Bellcraft Mfg. Company	"
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National Carbon Co.	"
United Aircraft	"
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Automatic Roof Cooling at Its Best.
So important in Southern Climates.

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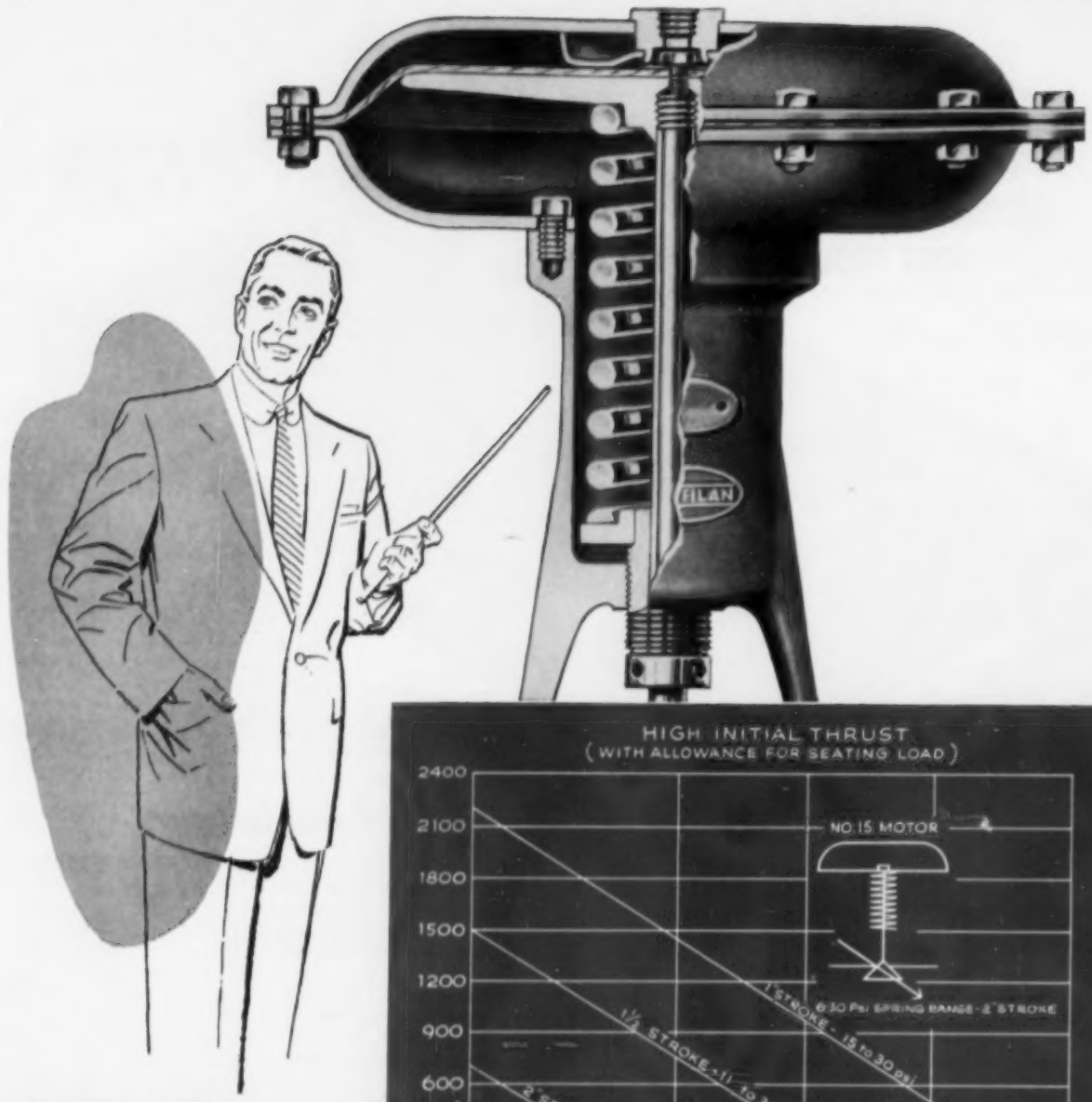
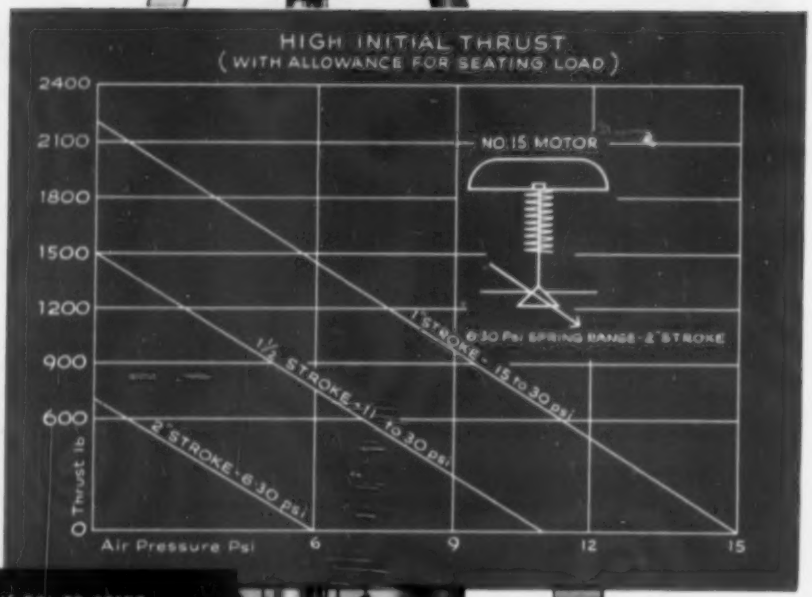
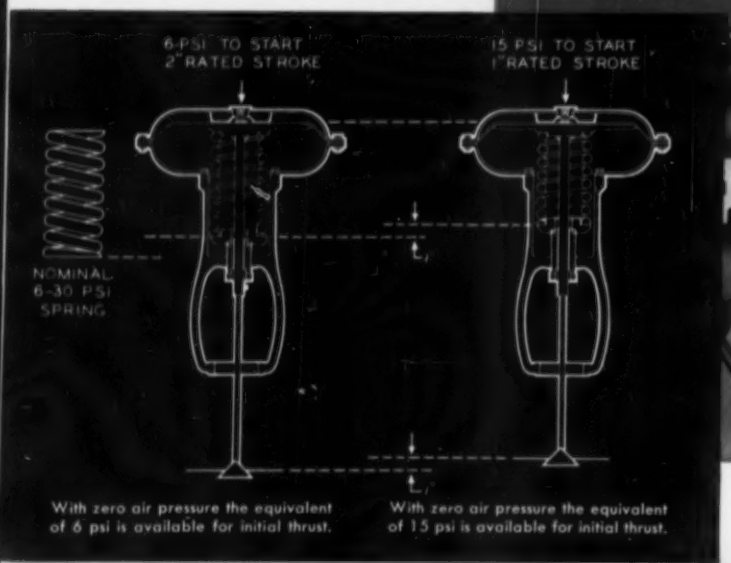




HIGH INITIAL THRUST:

Example — No. 15 Motor with 2" Rated Stroke and 6-30 psi Spring used on Valves with 2" and 1" Strokes.


6 PSI TO START
2" RATED STROKE
15 PSI TO START
1" RATED STROKE
NOMINAL
6-30 PSI
SPRING
With zero air pressure the equivalent of 6 psi is available for initial thrust.
With zero air pressure the equivalent of 15 psi is available for initial thrust.

In Single Seated Control Valves

Get AMPLE POWER plus SIMPLICITY, ECONOMY, SAFETY

with Masoneilan Spring-diaphragm Motors

You get the best combination of safety (action on air failure) with maximum potential thrust, plus inherent simplicity and reliability in Masoneilan Spring-diaphragm Motors for single seated control valves.

Many single seated valves are specified to close on air failure. Hence the initial spring compression must provide the force for closing, since the valve would normally be installed with flow tending to open. Thus, to overcome unusual off-balance forces, a high *initial* thrust must be developed.

On air-to-close valves, the motor should develop a high net thrust at the *end* of the stroke. Thus, to overcome unusual off-balance forces a high *final* thrust is essential.

The design of Masoneilan motors enables you to obtain high *initial* thrust or high *final* thrust or, in the case of three-way valves, *both* high initial and final thrust, using, in most cases, standard springs.

Here's how —

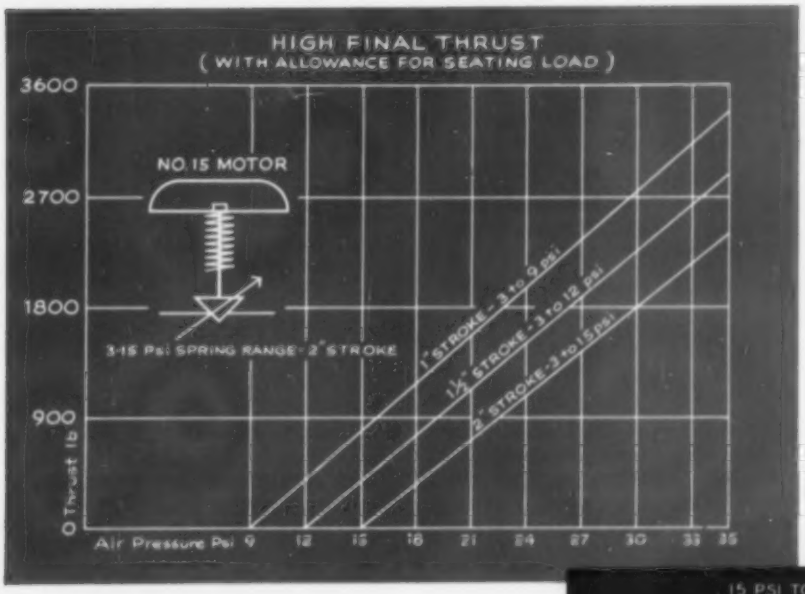
HIGH INITIAL THRUST: Usually an oversize motor is used with a standard spring, but with the difference in stroke used to gain more initial compression and consequent additional spring force.

HIGH FINAL THRUST: The normal size motor often is used by simply increasing the air supply pressure to 30 or 35 psi. If necessary an oversize motor can be used to obtain even greater final net thrust.

HIGH INITIAL AND FINAL THRUST: Using an oversize motor permits adjusting the spring setting to obtain high initial thrust and makes an excess of supply pressure available for high final thrust.

Example — No. 18 Motor with 3½" Rated Stroke and 6-30 psi Spring used on Valve with 2" Stroke.

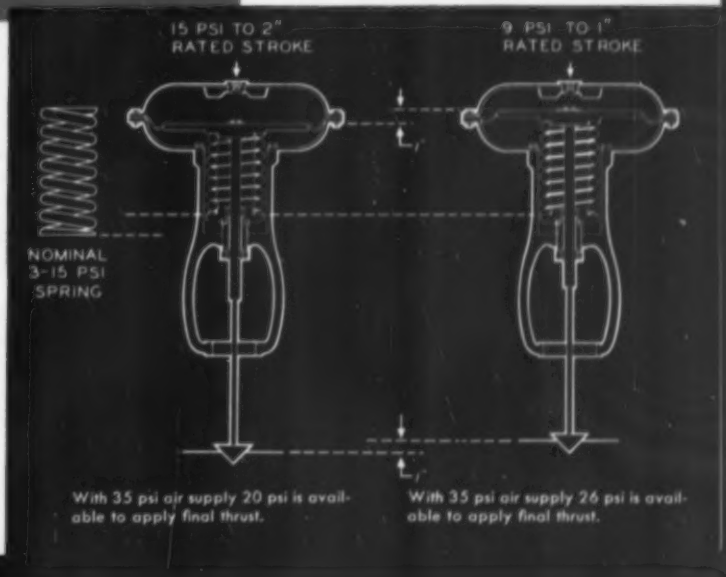
The spring can be set for 8-22 psi nominal range, giving an initial diaphragm load of 8 psi and (with 30 psi supply) 8 psi is also available for final thrust.


HIGH FINAL THRUST
(WITH ALLOWANCE FOR SEATING LOAD)
3600
2700
1800
900
0 Thrust lb
NO. 15 MOTOR
3-15 Psi SPRING RANGE - 2" STROKE
1" STROKE - 3 to 9 psi
1½" STROKE - 3 to 12 psi
2" STROKE - 3 to 15 psi
Air Pressure Psi 9 12 15 18 21 24 27 30 33 35

Tabulated data are available for facilitating correct control valve selection. Ask our nearest office for Data Sheet 10-11 — or write Mason-Neilan, Division of Worthington Corp., 35 Nahatan St., Norwood, Massachusetts.

HIGH FINAL THRUST:

Example — No. 15 Motor with 2" Rated Stroke and 3-15 psi Spring used on Valves with 2" and 1" Strokes.


15 PSI TO 2" RATED STROKE
9 PSI TO 1" RATED STROKE
NOMINAL 3-15 PSI SPRING
With 35 psi air supply 20 psi is available to apply final thrust.
With 35 psi air supply 26 psi is available to apply final thrust.

MASON-NEILAN

Division of Worthington Corporation

35 Nahatan Street, Norwood, Massachusetts

MASONEILAN

Sales Offices or Distributors in the Following Cities: New York • Syracuse Chicago • St. Louis • Tulsa • Philadelphia • Houston • Pittsburgh Atlanta • Cleveland • Cincinnati • Kansas City • Phoenix • Detroit San Francisco • Louisville • Salt Lake City • El Paso • Albuquerque Charlotte • Los Angeles • Corpus Christi • Denver • Appleton Birmingham • New Orleans • Seattle
Mason-Neilan Regulator Co., Ltd., Montreal and Toronto

FUTURE EVENTS of Engineering Interest

Apr. 1-3: 24th Annual Conference, **Southeastern Electric Exchange,** Boca Raton Hotel & Club, **Boca Raton, Fla.** John W. Talley, Exec. Director, 711 Haas-Howell Bldg., Atlanta, Ga.

Apr. 9-11: Fifth Welding Show, American Welding Society, Convention Hall, **Philadelphia, Pa.** R. T. Kenworthy, Exposition Management, 12 East 41st St., New York 17, N. Y.

Apr. 20-26: Twelfth National Industrial Health Conference, Kiel Auditorium, **St. Louis, Mo.** E. C. Holmblad, M.D., Managing Director, Industrial Medical Assoc., 28 East Jackson Boulevard, Chicago 4, Ill.

Apr. 10-12: National Nuclear Instrumentation Conference and Exhibit, Atlanta Biltmore Hotel, **Atlanta, Ga.** Technical sessions on instrumentation of nuclear power plants, radiation measurement, etc. Over 100 exhibits. Host Atlanta section Conference Committee headed by M. A. Dailey, Chairman and J. M. Spurlock, Vice Chairman. Herbert Kindler, I.S.A., 313 Sixth Ave., Pittsburgh, Pa.

Apr. 24 - 26: Annual Convention, **Natural Gasoline Association of America,** Rice Hotel, **Houston, Texas.** William F. Lowe, Secretary, 421 Kennedy Bldg., Tulsa, Oklahoma.

Apr. 25-26: ASME-SAM Management Conference, Hotel Statler, **New York, N. Y.**

Apr. 29-May 3: 7th National Materials Handling Exposition, Convention Hall, **Philadelphia, Pa.** 250 exhibits — Theme: Materials Handling, Key to Automation. Clapp & Poliak, Inc., 341 Madison Ave., New York 17, N. Y.

May 3: 48th Annual Exposition and Power Show, The University of Texas, **Austin, Texas.** T. A. Carlton, Public Rel. Chairman, Office of the Dean of the College of Engineering, The University of Texas, Austin 12, Tex.

May 15-16: Symposium, **The Age of Space,** Southern Research Institute, **Birmingham, Ala.** Non-technical level of developments in rocket and missile field. R. D. Osgood, Jr., Asst. Dir., Southern Research Institute, Birmingham 5, Ala.

May 16-17: Wood Industries Conference, ASME, **Winston-Salem, North Carolina.**

May 20-23: Design Engineering Show, New York Coliseum, **New York, N. Y.** 375 exhibits — ASME Design Engineering Conference. Clapp & Poliak, Inc., 341 Madison Ave., New York, N. Y.

May 20-23: 29th Annual Conference & Exhibit, Oil & Gas Power Div. of ASME, Kentucky Hotel, **Louisville, Ky.**

June 9-13: Semi-Annual Meeting, ASME, Sheraton - Palace Hotel, **San Francisco, Calif.**

June 14: Accident Prevention Conference, Public Utilities Association of the Virginias, Daniel Boone Hotel, **Charleston, West Virginia.** R. W. McKinnon, Exec. Sec., PUA of the Virginias, 5 Franklin Rd., Roanoke, Va.

Sept. 20-21: 39th Annual Meeting, Public Utilities Association of the Virginias, Greenbrier Hotel, **White Sulphur Springs, W. Va.** R. W. McKinnon, Exec. Sec., PUA of the Virginias, 5 Franklin Rd., Roanoke, Va.

Sept. 22-25: Petroleum-Mechanical Engineering Conference, ASME, Hotel Mayo, **Tulsa, Oklahoma.**

Sept. 27: Oklahoma Regional Meeting, Natural Gasoline Association of America, Skirvin Hotel, **Oklahoma City, Okla.** William F. Lowe, Sec., Natural Gasoline Assoc. of America, 421 Kennedy Bldg., Tulsa 3, Okla.

AGE Virginia Plant Mgrs.

John A. Patterson, Logan Plant manager of **Appalachian Electric Power Company,** has been promoted to manager of the **Clinch River Plant** under construction at Carbo, Virginia. He will be succeeded as Logan Plant manager by **Paul T. Schneider,** assistant manager of Philip Sporn Plant at Graham Station, West Virginia.

Patterson will be moving to the $55-million plant slated for completion late in 1958. Ground was broken last May, signalling the start of construction at the 450,000 kw plant.

Patterson has been associated with Appalachian and other companies in the American Gas and Electric Company System for 26 years. He has served as assistant plant superintendent at Appalachian's Cabin Creek Plant near Charleston and as superintendent of the Hazard Plant of Kentucky Power Company.

He was promoted in May, 1948 to assistant steam plant superintendent of Logan Plant and rose to superintendent in May 1949. He became Logan Plant manager in November 1950.

His successor as Logan Plant manager, Paul T. Schneider, also is a veteran of service on the AGE System. He came with Ohio Power Company as a draftsman at Philo Plant in April 1936. He transferred that year to Windsor Plant as a test engineer, later holding positions of assistant results engineer, results engineer and supervisor of operations.

Schneider became supervisor of operations at Sporn Plant in May 1949. He was promoted to assistant plant manager at Sporn Plant in August 1950.

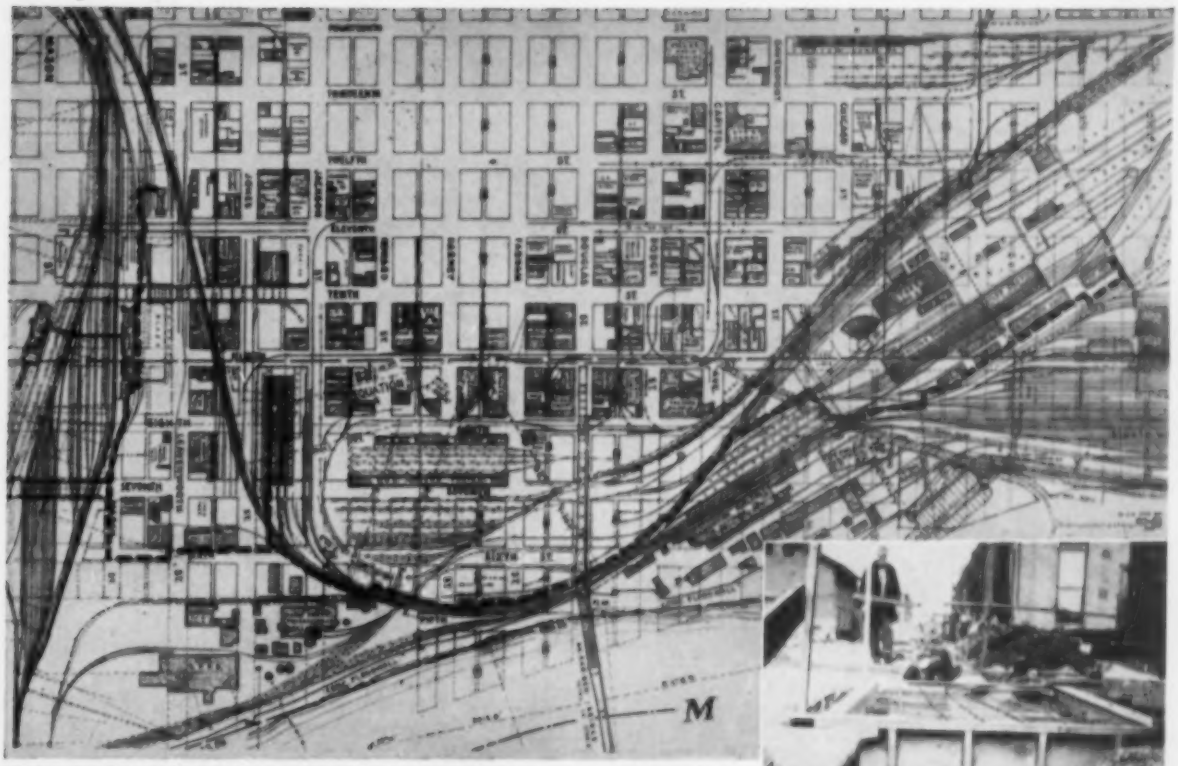
Rawson—Southwest

The appointment of **Robert E. Moore** as a sales engineer has been anounced by **Rawson & Co.** of Houston, Texas.

Mr. Moore was with the Shell Chemical Corporation at Houston for 7 years, serving in the Technological and Operating Departments. The last two years Mr. Moore was an assistant department manager.

Rawson & Co. operates in **Texas** and **Louisiana** and represents Petro-Chem Isoflow Furnaces, Stratco Contractors and Flash Evaporators, Ducon Cyclones, Brodie Meters, United States Gauges, and other equipment for the petrochemical industries.

(Continued on Page 24)



Union Pacific installation (heavy dotted line) runs under pavement to various shops and buildings. Gilsulate has high load-bearing capacity, takes heavy pounding here.

An 8-inch steam and 4-inch diesel line entering a bellows-type expansion joint in a manhole; system was installed by UP crews.

9250 ft. of GILSULATE®-covered steam lines help Union Pacific run smoothly in Omaha

Under tracks, alongside of tracks, under heavily-trafficked streets — practically all types of tough in-service conditions have been overcome by GILSULATE at Union Pacific Railroad's Omaha installation. Running from the main boiler room of the UP shops to the Union Station, the distribution system consists of three sections: 1) a 2800-foot section of 8-inch steam line; 2) 5300 feet of 8-inch steam and a 4-inch diesel oil line; 3) 1150 feet of 3-inch steam line branching from section (2) and carrying 150 psi steam plus 100 degrees superheat.

First installed in 1954 and continually subjected to pounding, shock and vibration from heavily-loaded freight trains and normal yard traffic, this GILSULATE system has functioned flawlessly. 810 tons of Type C GILSULATE were used initially, and additional installations are being made here and at other Union Pacific yards.

GILSULATE's insulating efficiency, all-around pipe protection, and high loading capacity make it the ideal choice for this and other types of installations. More and more, architects, engineers and contractors are discovering that GILSULATE provides permanent corrosion protection for hot underground pipes at the lowest cost per installed linear foot of any other pipe insulation system.

Investigate the value of low-cost, easily-installed, dependable GILSULATE. See your local GILSULATE distributor for a convincing demonstration. Complete details are yours for the asking. Write the office nearest you.

AMERICAN GILSONITE COMPANY
SALT LAKE CITY 1, UTAH

Affiliate of Barber Oil Corp. & Standard Oil Co. of Cal. OFFICES AT 134-P West Broadway, Salt Lake City, Utah, The Agents Building, 3537 Lee Road, Cleveland 20, O.

FACTS ABOUT GILSULATE

1. **EASY TO USE**—just pour and tamp . . . pipe heat does the rest.
2. **FORMS 3 ZONES** of protection against heat loss and all hazards commonly encountered by hot buried pipes.
3. **NEEDS NO HOUSING OR MECHANICAL SHEATHS**: no mixing, special handling or equipment.
4. **ONLY NEEDS NORMAL PIPE SPACING**: for multiple pipe or cramped conditions.
5. **THREE TYPES AVAILABLE**:
   Type A for 220°-300°F. temp. range
   Type B for 300°-385°F. temp. range
   Type C for 385°-520°F. temp. range

GILSULATE®

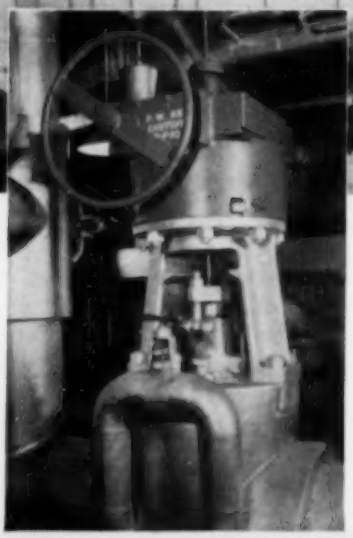
The Triple-Zone Insulation System For Lifetime Protection of Hot Underground Pipes

Do you receive PIPE INSULATION NEWS? Ask to be put on our mailing list.

WORLD'S LARGEST PRIVATE POWER PLANT USES LUNKENHEIMER BREECH LOCK VALVES

The giant Clifty Creek Plant at Madison, Indiana, is the largest investor-owned power facility in the world. It produces enough power to supply the entire city of Chicago. Together with its sister plant at Kyger Creek, Cheshire, Ohio, it provides power at the rate of 17 billion kilowatt-hours annually for the Atomic Energy Commission center at Portsmouth. Lunkenheimer Valves in steel, cast iron, bronze, and special alloys are used to control flow throughout the plant. Exclusive Lunkenheimer Breech Lock Valves are used to regulate high-pressure boiler feed water at maximums of 3000 psi—460°F.

Stacks at Clifty Creek are 682 feet high—the world's tallest. Clifty Creek is owned and operated by Indiana Kentucky Electric Corporation, a subsidiary of the Ohio Valley Electric Corporation, a group of 15 major power generating utilities.



LUNKENHEIMER QUALITY

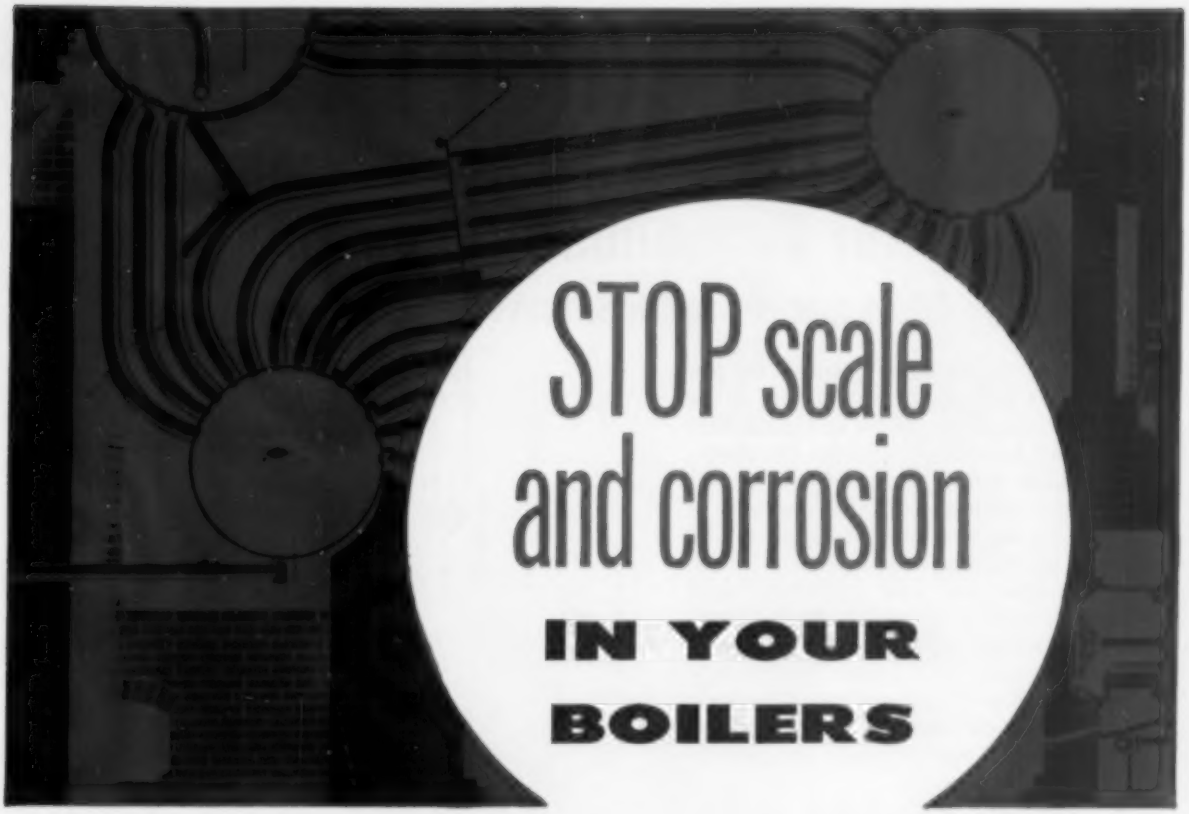
The motor-operated 12-inch Breech Lock Valves shown here control the North High Pressure Feed Water Inlet at Clifty Creek. Their principal feature is the transmittal of bonnet thrust to the body through interlocking, internal breech-lugs, with the final pressure seal of the body-bonnet joint made by a seal weld. This construction permits the pressure tightness and maintenance-free service of a full-strength welded bonnet, plus the added advantage of easy disassembly and reassembly. The weld can be readily chipped out if necessary. *Write for literature* to The Lunkenheimer Co., Box 360, Cincinnati 14, Ohio.

STEEL • IRON • BRONZE • PVC

L-956-33

LUNKENHEIMER®

THE ONE *Great* NAME IN VALVES



STOP scale and corrosion IN YOUR BOILERS

Every good engineer knows that the costly shut-downs and repairs caused by scale and corrosion can be avoided through the use of the right feed-water treatment. That's why hundreds of the best engineers use Braxon and Flako formulas.

These highly-developed products, based on phosphate or carbonate control, prevent and remove scale in boilers. They also prevent foaming and carryover.

There's an Anderson field representative in your area who has broad experience in every kind of industrial water problem. He will gladly analyze your water and prescribe the proper treatment to protect your equipment against costly corrosion and scale. What's more, he will continue to make periodic analyses to be sure you are being properly protected. The valuable service costs you nothing. It can save you much. Let us know when you would like to see him.

Write, Wire or Call

SPECIALISTS IN MAKING WATER BEHAVE

Anderson Chemical Company, INC.

Box 1424 • MACON, GEORGIA • Phone 5-0466

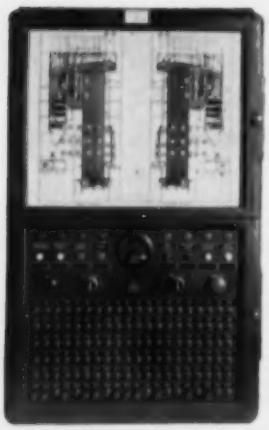
Another Vulcan Selective-Sequence for Consolidated Edison!

Con-Edison specifies Vulcan Selective-Sequence Soot Blowing for Arthur Kill Station

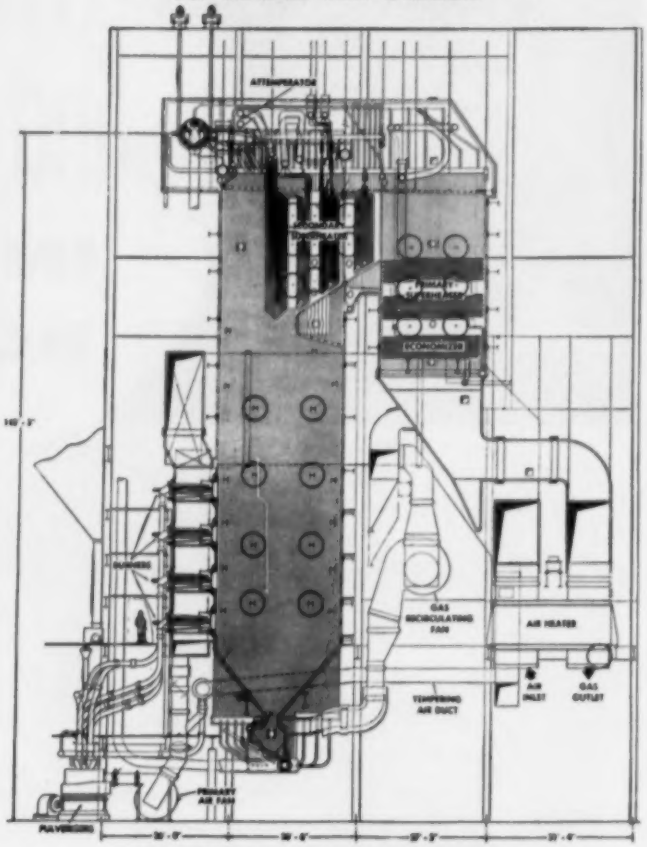
The 2,400,000 pph boiler planned for the Arthur Kill Station, Staten Island, is an exact duplicate of the boiler at Astoria Station. As at Astoria, each of the two forty-foot furnaces will be equipped with an all-electric custom designed Vulcan system.

Drive for the soot blower systems will be electric; the blowing medium steam. Each wall deslagger and long retractable soot blower has a direct-acting Type D head, and a pressurized seal and aspirator for the pressurized furnace. Wall boxes for the long retracts combine scraper and seal. This novel arrangement simplifies sealing off boiler gases from the soot blowers, and assures full protection.

Whether your boiler is large or small, power or process—a modern Vulcan Soot Blower System with automatic-sequential or selective-sequence control will keep it operating at peak efficiency. Your Copes-Vulcan representative has the ideas, information and experience to help you choose the system best suited to your needs.



NERVE CENTER of the Selective-Sequence system consists of two completely pre-wired, factory-assembled controllers—one for the soot blowers in each furnace. Selective-Sequence lets operating personnel select the proper blowing sequence for most effective boiler cleaning. Since each soot blower is separately monitored, the operator can tell at a glance which blowers are operating, time elapsed, number of blowers that have operated and the location of any malfunction of equipment or blowing medium.



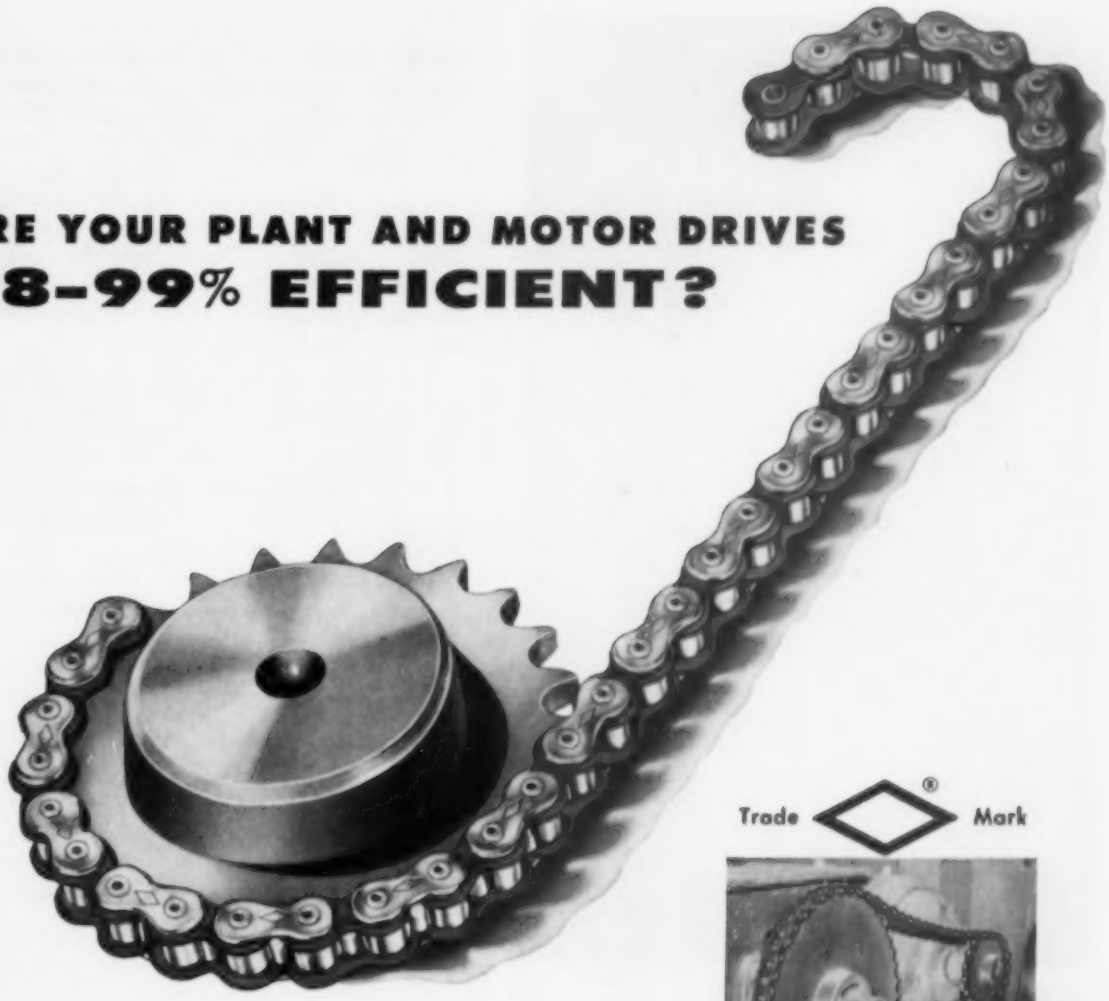
CONSOLIDATED EDISON COMPANY
ASTORIA GENERATING STATION, NEW YORK, NEW YORK
BABCOCK & WILCOX TWIN-FURNACE BOILER
2—40′-0″ FURNACES

Capacity, Lb. Steam per Hour	2,400,000
Design Pressure, PSI	2,500
Fuel	pulverized coal, oil or gas
Superheater Outlet Pressure, PSI	2,150
High-Pressure Steam Temperature, F	1,050
Pressurized Furnace Reheat Steam Temperature, F	1,000

C-3400A

COPES-VULCAN DIVISION
BLAW-KNOX COMPANY
ERIE 4, PENNSYLVANIA

ARE YOUR PLANT AND MOTOR DRIVES 98–99% EFFICIENT?



Trade ◇® Mark

YOUR DIAMOND DISTRIBUTOR WILL SHOW YOU HOW DIAMOND ROLLER CHAIN IMPROVES DRIVES

When planning new plant or motor drives or when replacing worn and less efficient drives, call your Diamond Chain Distributor. He will show you how uniform highest-quality Diamond Roller Chains improve drives, give longer maintenance-free performance, turn wasted power into useful work.

Look in the yellow pages of your telephone book under "CHAINS" or "CHAINS-ROLLER" for your Diamond Distributor.

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DIAMOND ROLLER CHAINS

VU Boilers exceed performance guarantees

at Central Fibre Products Co.

The two C-E Vertical Unit Boilers installed in this plant have exceeded their guaranteed efficiency of 82.6% and guaranteed peak capacity of 100,000 lb steam per hr. These stoker-fired units are equipped with a C-E overfire air system that *works to perfection* by completely burning out all combustibles at the proper point, allowing for a *very clean furnace.* There is *absolutely no smoke* from the stacks. Furthermore, the draft loss of each unit – as well as the flue gas temperature leaving the economizer – is lower than the customer expected.

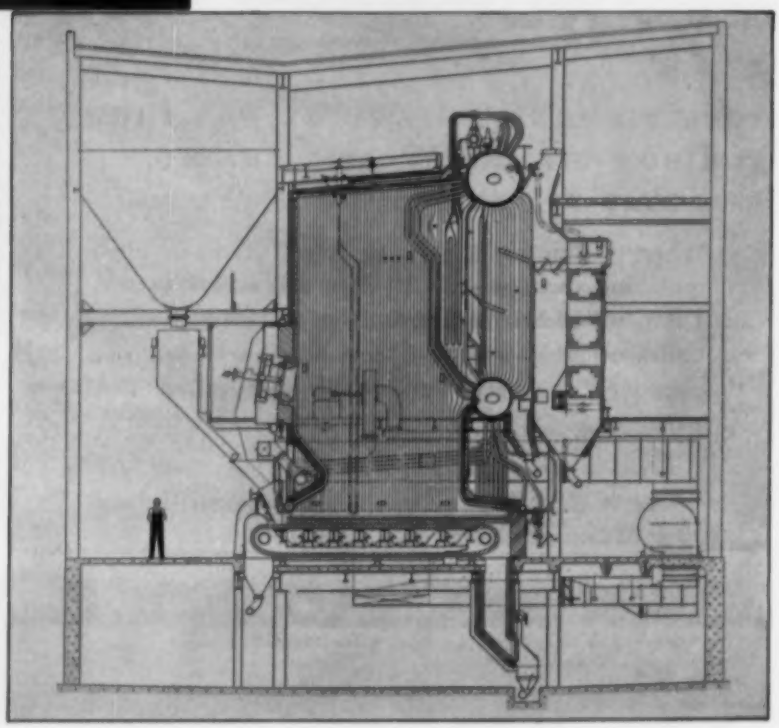
The above comments are all contained in a report written by the H. M. Wilson Company, Inc., Consulting Engineers to the Central Fibre Products Company, of Quincy, Illinois. Of course, it won't hurt to get the opinion of the customer, too, if you're interested. They will be very happy to discuss their boiler installation with you.

Incidentally, when you need boilers, consider the fact that Combustion has a complete line of steam generating and fuel burning equipment suitable for any pressure, temperature and fuel requirement.

Below: Cross-sectional elevation of the C-E Vertical Unit Boiler, Type VU-50X, installed in the Mill Division Plant of the Central Fibre Products Company, Quincy, Illinois. There are two units, each fired with a C-E Traveling Grate Stoker and designed for the future use of oil or gas as alternate fuels.

Present operating conditions are 185 psi and 450 F. Each unit has a maximum continuous capacity of 85,000 lb per hr and a four hour peak of 100,000 lb per hr. The boilers are designed for 630 psig and in the future will operate at 610 psig and 650 F.

Firing aisle at the Central Fibre Products Mill Division plant at Quincy, Ill. This is a front end view of two C-E Traveling Grate Stokers which fire the VU Boilers as shown by the cross-sectional elevation drawing.



COMBUSTION ENGINEERING

Combustion Engineering Building
200 Madison Avenue, New York 16, N. Y.

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Combustion Engineering-Superheater Ltd.

all types of steam generating, fuel burning and related equipment; nuclear reactors; paper mill equipment; pulverizers; flash drying systems; pressure vessels; soil pipe. B-967A

KILL-off blue-green bloom with PHYGON-XL

ALGICIDE

PHYGON-XL is a low-cost and effective control for the most troublesome nuisance organisms in water—Algae.

Algae in an industrial water system can have far reaching effects on acidity, on outlets, inlets, filters and pipes in a distribution system. Use Phygon-XL to eliminate these troublesome factors. Added directly into the system at a rate of four pounds per million gallons of water, PHYGON-XL reduces over-all purification costs and the frequency of cleaning or back-washing filters.

Using PHYGON-XL to supress blue-green Algae blooms in lakes, ponds and reservoirs, also provides an opportunity for the vigorous growth of helpful aquatic plants. It can be mixed with water and applied as a spray over the area to be treated—about one to five pounds of PHYGON-XL per acre of water surface.

You'll find PHYGON®-XL is: effective, easy to use, and inexpensive. Write, wire or phone us if you are unable to locate an immediate source of supply.

United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

New! Multi-purpose

Gulfcrown stands up to cold. It pumps easily in coldest weather at temperatures of 0°F. and below.

GULFCROWN Grease

does the work of many greases —withstands heat, cold, water

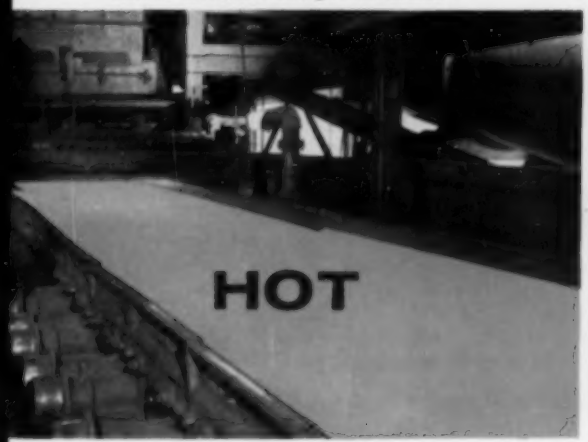
It's a fact—you can use Gulfcrown practically anywhere! On plain or antifriction bearings. In paper mills, textile mills, steel mills, power plants. Outside or inside. You name it, chances are Gulfcrown will lubricate it—but good! Operating conditions can be hot, cold or wet . . . this tough all-purpose grease does its job regardless.

You can see how one multi-purpose grease that does the work of many is a big money-saver. It reduces inventory, cuts lubricating costs and prevents application errors. Check the saving yourself—test Gulfcrown. Ask your Gulf sales engineer or write for free literature.

GULF

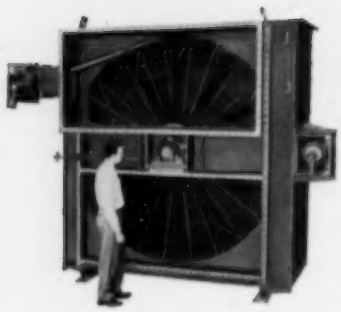
GULF OIL CORPORATION
1822 Gulf Building, Pittsburgh 30, Pa.

Gulfcrown resists heat. It won't get thin, won't run out of bearings even at 250°F.



Gulfcrown sheds water—won't wash away. That's why it's a good rust preventive, too, under the dampest conditions such as this wet end of a paper machine.

For more information, use Reply Card — Page 89



HOW MANY STACK BTUs DO YOU BUY EACH YEAR?

Whether you burn it — or dissipate it up the stack — every BTU costs you money. In fact:

Yearly cost of fuel often equals the cost of your boiler. That's why heat recovery — or dollar recovery — is so important. Boilers simply have huge appetites for fuel . . . fuel that's constantly going up and up in cost.

And small boilers are no exception. Even with relatively small boilers — that is, between 25,000 and 250,000 lbs per hr — substantial heat recovery is possible. With a Package Ljungstrom Air Preheater, fuel consumption is most often reduced 10% or more! As a result, many plants have written off their Ljungstrom within two years.

Get more steam, and cleaner stack gases. Put it another way. The BTUs that you save with a Package Ljungstrom can be used to increase boiler output. What's more, higher combustion temperatures cut slagging . . . keep stack gases clean . . . allow use of cheaper fuels . . . reduce corrosion.

Comes complete, ready to install. Determine for yourself how easily a low-cost, *shop-assembled* Package Ljungstrom can be applied to your generating or process system. Ask for our brand-new 16-page brochure. It's yours with our compliments, simply by writing to the address below.

The Air Preheater Corporation 60 East 42nd Street, New York 17, N. Y.

Grapes are stored at 32°F, potatoes at 40°F. Anhydrous ammonia, carried in SPANG CW Steel Pipe, is used as the refrigerant.

Mr. George Eckert, standing in one of the storage cooler rooms, reports on performance of SPANG CW Steel Pipe at Bakersfield Ice & Cold Storage Company. Despite acid action and earthquake vibrations, no replacements have been necessary in almost 15 years service.

"ACID ACTION HAS FAILED TO MAR THE PERFORMANCE OF SPANG CW STEEL PIPE IN OVER 14 YEARS SERVICE"

says Mr. George C. Eckert, Vice President and Manager, Bakersfield Ice & Cold Storage Company, Bakersfield, Calif.

"Repeated coatings with sulphuric acid film, occasional earthquake vibrations, and a constant flow of anhydrous ammonia have all failed to damage our SPANG CW Steel Pipe, installed in 1942. In fact, no piping replacements have been necessary during the almost 15 years of continuous operation to which the pipe has been subjected," reports Mr. Eckert.

"Last year we stored 85 carloads of grapes. The control of bacteria and insect life on grapes requires the weekly use of sulphur dioxide gas which is sprayed into the storage room. The gas changes into sulphuric acid when it strikes moisture, forming a highly corrosive film on the pipe surface. This acid action, however, has failed to mar the performance of the SPANG CW Steel Pipe which has endured this condition for more than 14 years, and is still giving good service," commented Mr. Eckert.

THAT'S SPANG QUALITY CONTROL AT WORK!

Quality Control in manufacturing builds long years of service into every foot of SPANG CW Steel Pipe. Careful attention to temperatures and forming and welding pressures produces in SPANG that extra *quality* that means extra service for you.

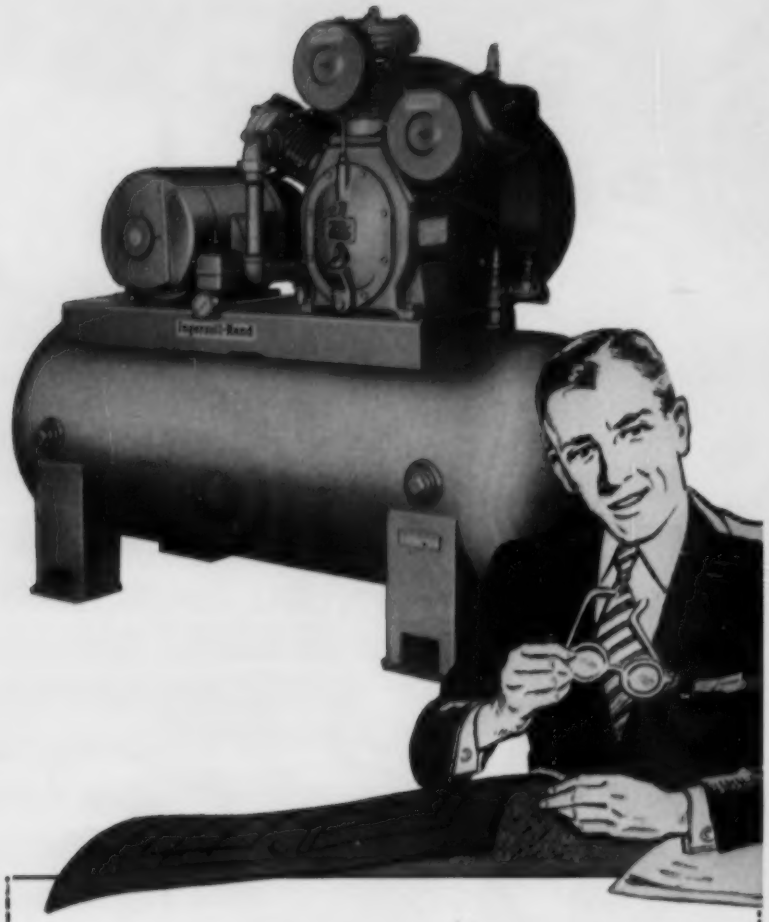
Prove to yourself what SPANG Steel Pipe can do for you. Make your next pipe order SPANG CW Steel Pipe. Your nearby Spang distributor will be glad to serve you.

SPANG CW STEEL PIPE

SPANG-CHALFANT

Division of The National Supply Company

General Sales Offices: Two Gateway Center, Pittsburgh, Pa. District Sales Offices: Atlanta, Boston, Detroit, Houston, Los Angeles, New York, Philadelphia, Pittsburgh, St. Louis



"... the compressor is an Ingersoll-Rand

Our daily plant production is totally dependent upon air power. We can't afford a shut-down. We must have the most dependable air compressor that we can buy."

Ingersoll-Rand
11 Broadway, New York 4, N.Y.

PACKAGED AIR-COOLED COMPRESSORS,
½ through 20 hp

3-461

News (Continued)

Air Accessories—Southwest

William K. McConnell, vice president of Air Accessories, Inc., recently announced the appointment of **Ray Goudeau** to the post of sales manager of the firm's **Delta Products** and **AMC Supply Divisions.**

The newly created post covering both divisions places Mr. Goudeau in charge of Air Accessories' industrial and aircraft supply distribution and manufacturing operation at the **Fort Worth** main office and the **Houston** branch office and warehouse.

The Delta Products Division is recognized as the South's largest distributor of Plexiglas and is one of the area's chief suppliers of other plastic and rubber products. Delta Products new plastic fabricating factory is fast becoming a factor in industry by manufacturing specialized plastic parts for products produced in the Southwest.

The AMC Supply Division operates as a distribution center for specification hardware used throughout the aviation industry of the nation.

Childers—Houston

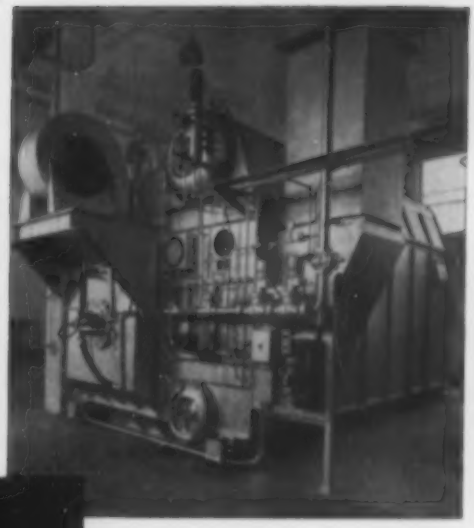
Robert C. Drolet has been named plant manager of **Childers Manufacturing Company** by R. A. Childers, president of the Houston firm.

The appointment was made as the Childers organization began "Operation Daytime Cover-Up" — large-scale marketing of prefabricated steel carports in multiple-unit sizes. This production for the industrial and commercial fields is a result of the growing demand for daytime car protection at manufacturing plants and business locations.

Drolet's over-all production responsibility also includes the manufacture of architect-designed carports for residential installations, aluminum awnings and patio covers, aluminum roofing and siding, and aluminum jacketing for thermal-insulated pipe lines. All products are advertised and sold nationwide.

(*Continued on Page* 32)

packaged power for limited space requirements . . .



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Type D-K

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Where boiler room space is definitely limited, the KEELER TYPE D-K Water Tube Package Steam Generator is the answer to your problem! It's a comparatively wide and short boiler for use where long boilers of other types cannot be accommodated.

KEELER TYPE D-K Package Boilers are made in oil or gas fired units with capacities from 8000 to 45000-lbs. of steam per hour—standard design pressures of 200 psi and maximum design pressures of 500 psi. The furnace sides, roof and floor, as well as front and rear walls, are water cooled and insulated. The complete "package", ready for quick hook-up and operation, includes all burning equipment, controls, safety devices and accessories.

For a low first cost, low operating cost outfit, you'll want the full particulars on this compact Package Power Plant! Write or phone . . . there's a KEELER representative at your service in your locality.

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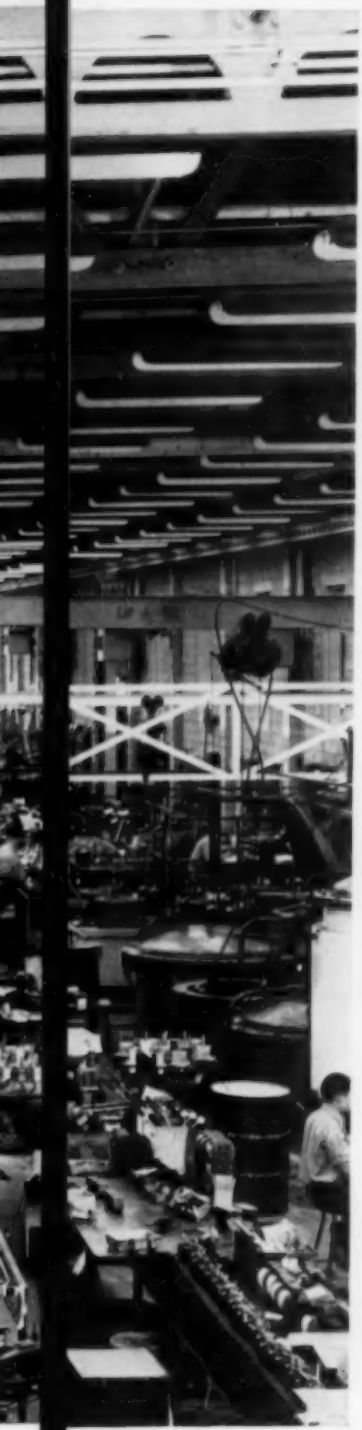
KEELER WATER TUBE Boilers



Here's how Westinghouse power centers increase plant output...safely

Safe, efficient power distribution that actually helps increase plant output... that's what this Western Pennsylvania manufacturer realized by installing modern Westinghouse dry-type power centers.

Dry-type power centers minimize installation costs because they are completely safe. Since they are *both* fire and explosion resistant, they can be located right in the production area. They require no vaults, catch basins, toxic gas vents, or drains. Lightweight, they can be installed overhead, releasing valuable floor space for production. This makes it easier to locate them close to the load they serve, shortening secondaries, cutting line losses, improving regulation. The result: Increased production efficiency.

In the plant pictured at the left, two Westinghouse power centers divide the load. Capacity is provided in each to allow for expansion.

Add these up for your plant: (1) Safe, economical installations. (2) Increased production space. (3) Increased plant efficiency through improved regulation. (4) Savings in power cost through reduced losses. (5) Savings in heavy copper through shortened secondaries.

Westinghouse power centers can bring these advantages to your plant, too. Because they are factory assembled and coordinated as one unit, with components designed to meet your individual requirements, they can be installed quickly and easily. For further information, check with your contractor, your Westinghouse distributor or local representative, or write direct to Westinghouse Electric Corp., P.O. Box 868, Pittsburgh 30, Pa.

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The INDUSTRIAL CENTER is only 20 minutes from Manhattan, 2 minutes from Newark Business Center, 3 minutes from Lackawanna and Erie Freight Stations, 10 minutes from Newark Airport, in an area of excellent labor supply

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OTIS ELEVATOR COMPANY • 260 ELEVENTH AVENUE • NEW YORK 1, N. Y.

our 11 Otis Freight Elevators under Otis Maintenance"

D. L. ALEXANDRE
Vice President
EAST NEWARK REALTY CORP.

"We provide our industrial tenants with freight elevator service as part of their leases. At present we have 11 OTIS Freight Elevators in operation. All but 2 were newly installed between 1936 and 1948. They've always been under OTIS Maintenance.

"Naturally, uninterrupted operation and maintenance costs are of considerable interest to us. With the OTIS factory and local office only minutes away we have no concern about emergency service. However, we have found that OTIS 'engineered service,' which replaces all wearing parts before failure, keeps our elevators operating at their original efficiency without interruption.

"From a maintenance standpoint, we know exactly what our monthly cost will be. It's a fixed charge that's adjusted annually on labor and material costs only and never because of the age or condition of the equipment. With 11 freight elevators in operation it's nice to know that we can't suddenly be confronted with a stack of costly repair bills."

maintenance that keeps freight elevators running like new

- Guarantee of the maker's high standards of safety through the constant checking and replacing of parts in advance of their breakdown point.
- Elimination of all guesswork in testing and repairing by using specially designed tools and electronic equipment to minimize shutdowns.
- Systematic upkeep and replacement of parts extend the life of an installation indefinitely.
- The value of a maker's pride. A perfectly performing Otis installation is Otis' best salesman. That's why we're never satisfied with anything less than peak performance at all times.

Baker Trucks, too, are designed with maintenance in mind. This 4,000-pound gas truck has at least 12 maintenance features.

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The Baker-Raulang Company, maker of Gas and Electric Trucks, is a subsidiary of the Otis Elevator Company.

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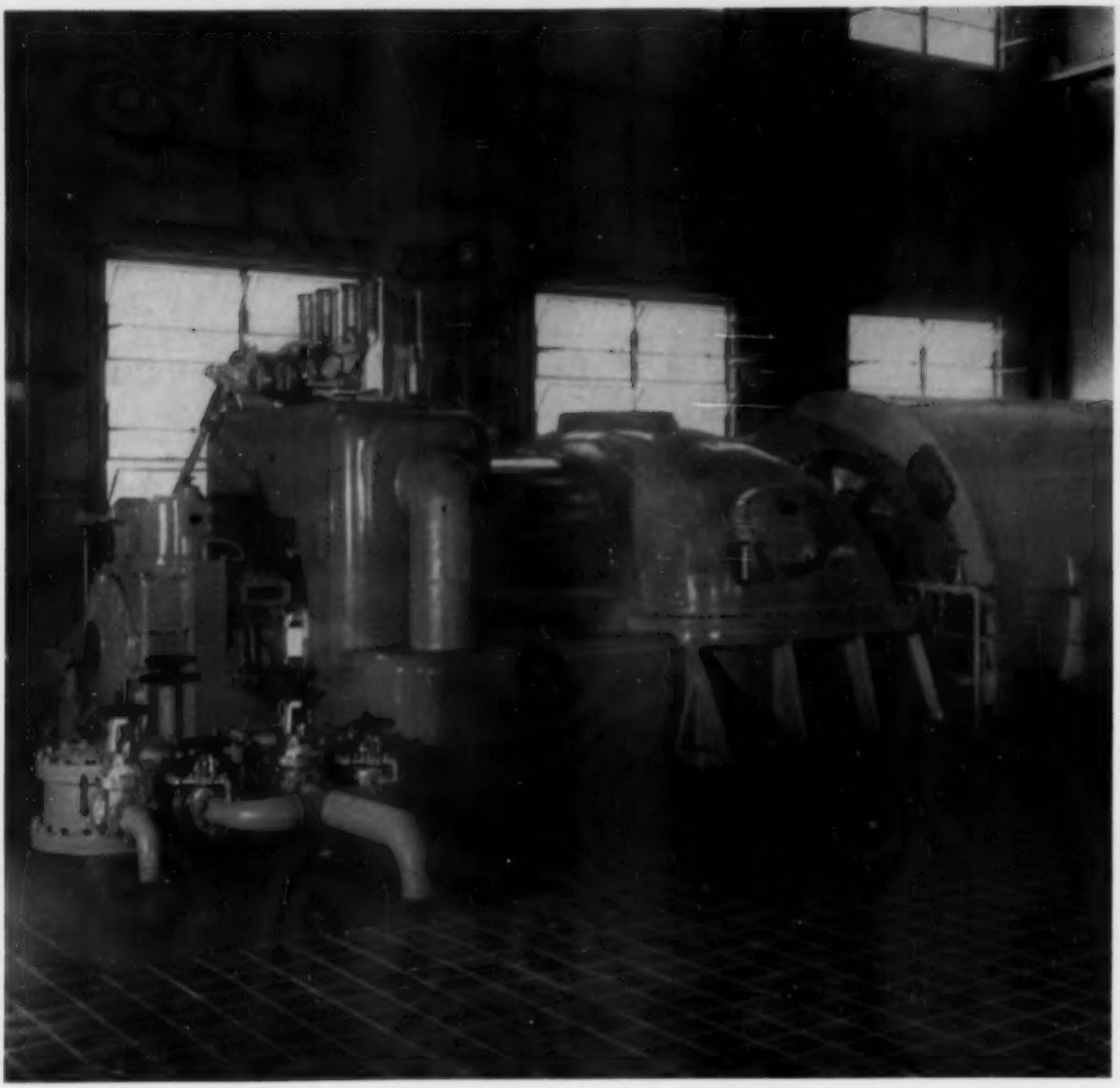

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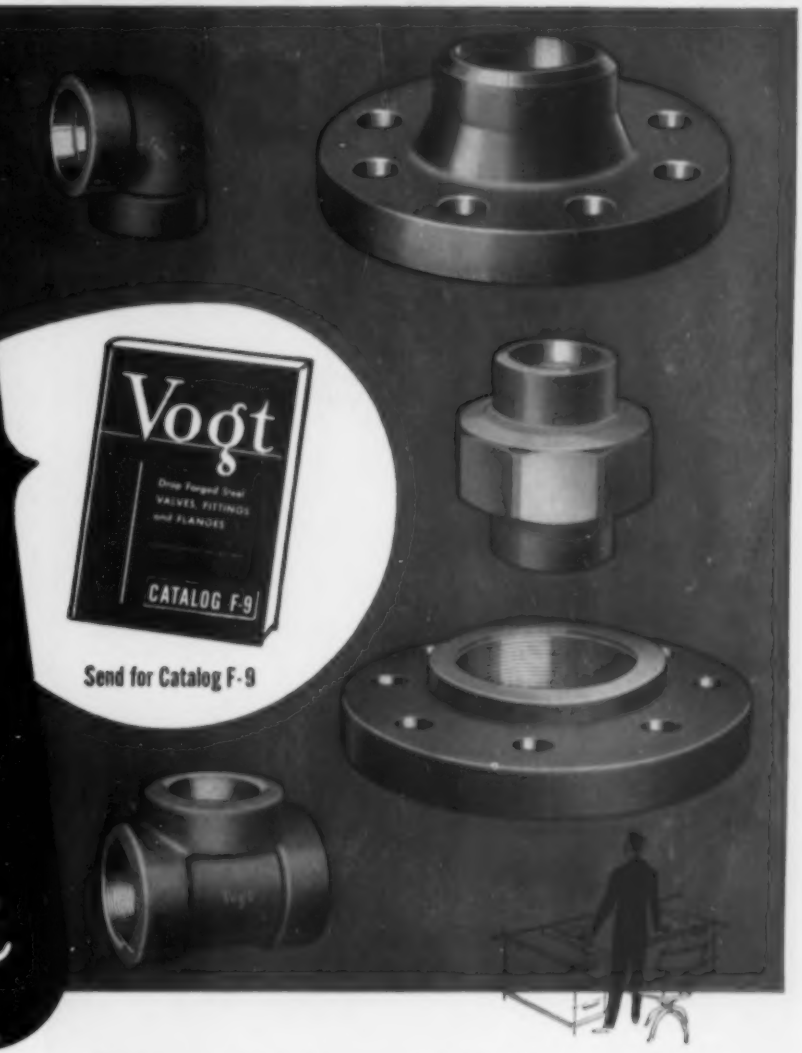
STRONGER and SAFER for every high pressure pipeline duty...

...because they are **drop forged by Vogt**



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Constantly imitated but never duplicated, Vogt drop forged steel fittings and flanges have unmatched strength and toughness for your most severe pipeline duties. Laboratory controlled materials and Vogt's special forging techniques assure products which are always uniform in structure, fine grained, and free from porosity. Thereby the shocks and stresses imposed by high pressures and high temperatures are easily withstood, and with stubborn resistance to erosion and corrosion. Consult Catalog F-9 for our complete line of fittings and flanges.

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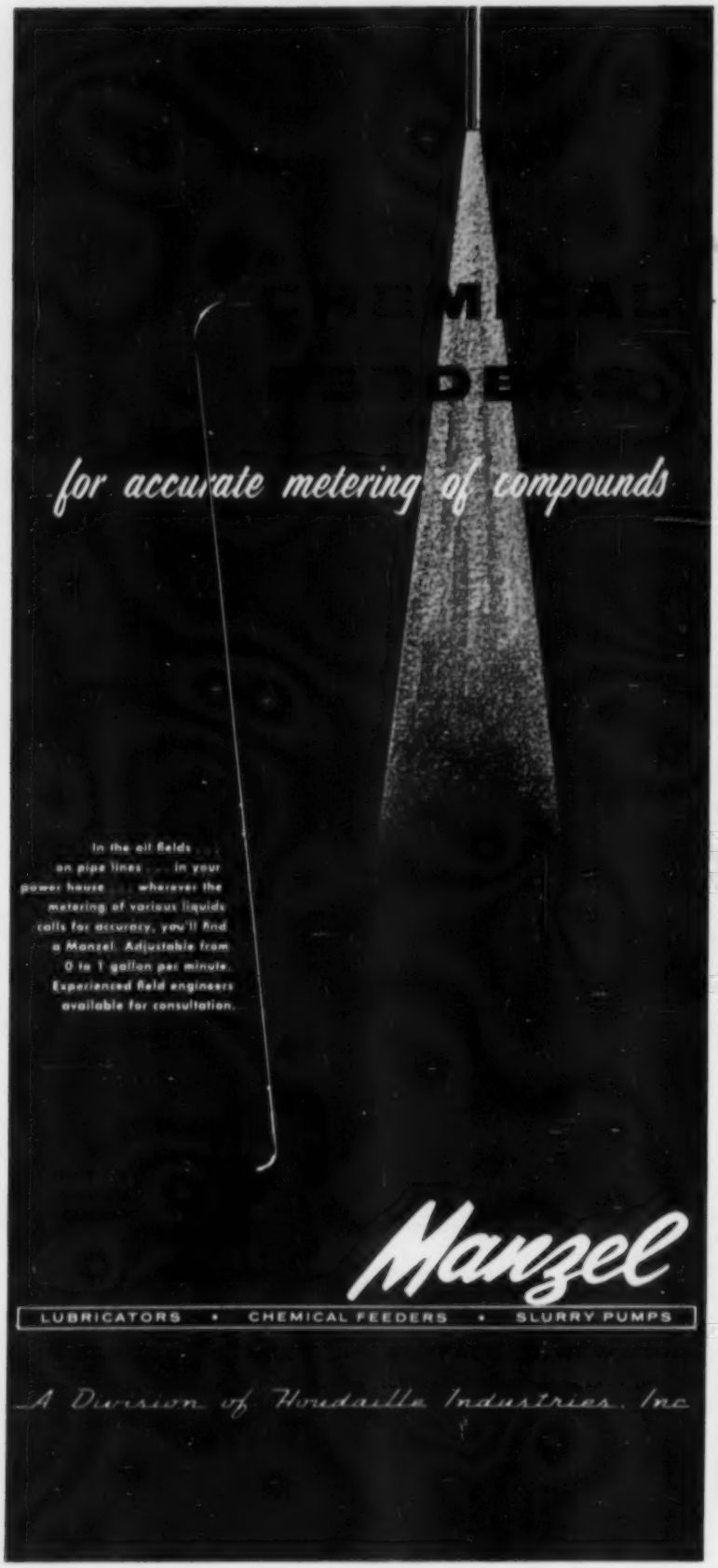
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News (Continued)

Southwestern Gas & Elec. Personnel Promotions

John W. Turk was recently named to the newly created position of nuclear development engineer for **Southwestern Gas and Electric Company** with headquarters in Shreveport, La. After graduating from the University of Texas with a degree in mechanical engineering, Mr. Turk joined Southwestern as a helper in the power department at Shreveport. He transferred to Knox Lee power plant in 1949 as mechanical and instrument repairman and in 1954 was elevated to the position of chief engineer at the Lone Star plant.

Mr. Turk has been working part time on atomic research since the middle of 1956 and will now devote all his efforts to this field. Southwestern is a member of the Atomic Power Engineers Group sponsored by Sargent and Lundy.

Other promotions, recently announced in the *Southwestern*, a company publication, include: **Luther Mays**, former station machinist to maintenance foreman of the Arsenal Hill power plant; **George E. Moore** to chief engineer of the Lone Star plant; and **Cornelius Ryder** to Mr. Moore's former position of maintenance foreman.

Oakite—Gulf Coast

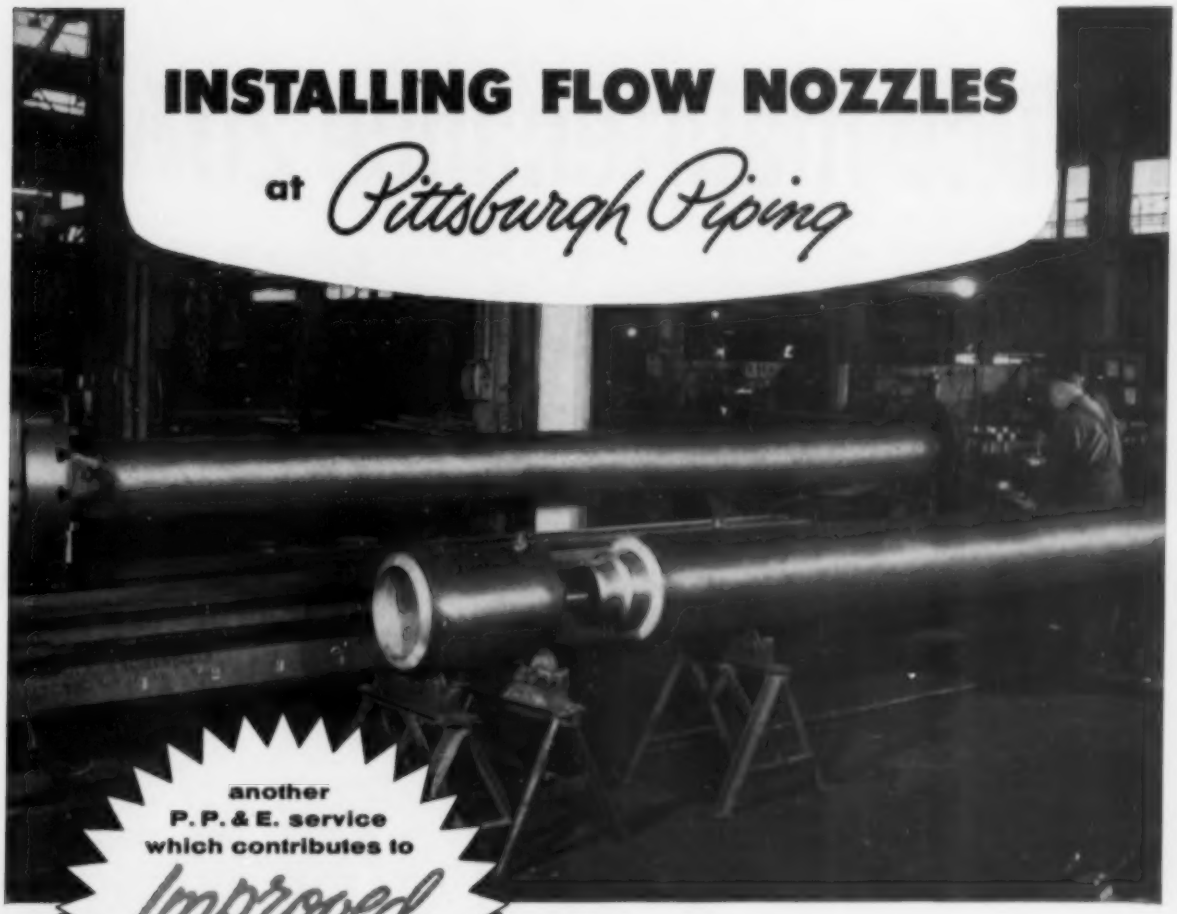
Oakite Products, Inc., manufacturers of industrial cleaning materials and equipment, have announced new assignments for their Southwestern technical field organization:

E. Lacy, for many years an Oakite representative in Detroit, will join **H. T. Hancock** and **J. B. Watts** in **Houston**, where he will serve the metal industries. **B. B. Herron** has been transferred from **Odessa** to **Beaumont**, and **R. W. Krajicek**, formerly a representative in Billings, Montana, will now cover the area around **Lake Charles, Louisiana. Theo L. Matula**, formerly with a major meat packing firm, has been assigned to serve the food industries in **San Antonio**, replacing **Horace V. Wells**, who has been transferred to **Corpus Christi.**

(*Continued on Page 94*)

INSTALLING FLOW NOZZLES

at Pittsburgh Piping



another
P. P. & E. service
which contributes to
Improved
HIGH-TEMPERATURE
HIGH-PRESSURE
PIPING

Pittsburgh Piping's precision installation of flow nozzles in high-pressure piping is the result of extremely skillful machining, fitting, and welding by experienced craftsmen. This is another example of advanced techniques — available at Pittsburgh Piping — which provide greater safety, higher efficiency and longer life from high-pressure, high-temperature piping.

Precision fitted flow nozzles; largest shown is for 16" main steam line; 4" and 6" sizes in foreground are for boiler feed lines.

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Carbon Steel Piping	Forged Piping Materials
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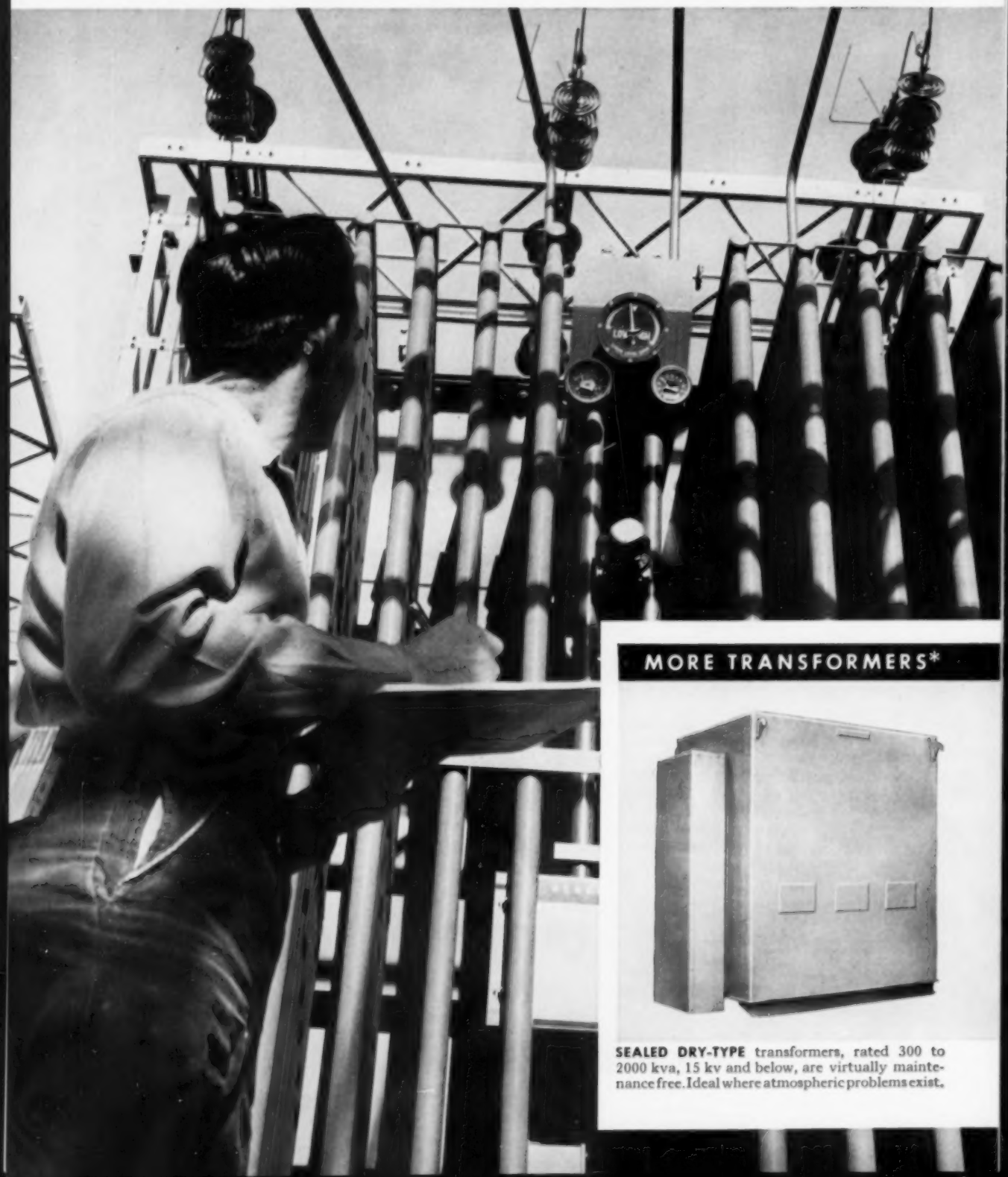
PP-19

Reduce maintenance 20% with



MORE TRANSFORMERS*

SEALED DRY-TYPE transformers, rated 300 to 2000 kva, 15 kv and below, are virtually maintenance free. Ideal where atmospheric problems exist.

General Electric RM medium transformers

If your new or modernized plant power system calls for transformers 501 to 7500 kva, 69 kv and below, you'll benefit from reduced maintenance on General Electric RM (Repetitive Manufacture) medium transformers.

These G-E features have helped owners cut transformer maintenance time and costs 20 percent and more:

Control-center arrangement of instruments and gages makes them easier to read, easier to service.

Full drain permits sampling of oil from the very bottom of the tank, where water or sediment could collect. This allows less frequent, more complete inspections.

Super Melaglyp finish gives you up to 150% longer paint life. A spray-on can is furnished with each transformer so you can touch-up, prevent rust spots.

MORE RM MEDIUM TRANSFORMER BENEFITS:

Reduced maintenance is only one of the outstanding benefits you'll receive. Here are more:

Faster, less expensive installation—shipped completely assembled, RM medium transformers have features such as ski-tip bases, extra jacking space, and reversible junction boxes which can cut installation time to only four hours.

Shorter shipments—standardization of design and General Electric's repetitive manufacture process cut shipping time to 10 weeks. Voltage ratings and optional features available make these standard units ideal for most industrial applications.

Before you buy a medium transformer, contact your nearest General Electric Apparatus Sales Office. You'll discover how faster shipment, easier installation, reduced maintenance, and longer life add up to more for your transformer dollar. General Electric Company, Schenectady 5, New York. 416-14

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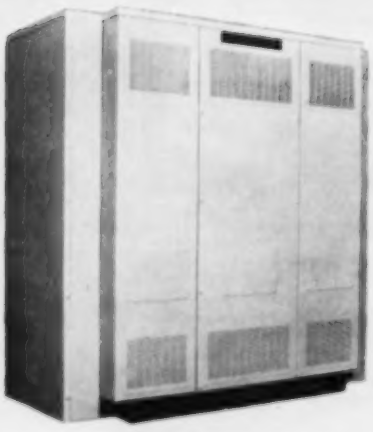


OPEN DRY-TYPE transformers, rated 300 to 2000 kva, 15 kv and below, are used in clean, dry, indoor locations where weight or floor space present problems. Light enough to mount overhead!

LIQUID-FILLED transformers, rated 112½ to 500 kva, 15 kv and below, conveniently and economically supply small blocks of power. Outdoor units are oil-filled; indoor, Pyranol† filled.

*** These same transformers are also incorporated in General Electric's outstanding line of load-center and distribution-center unit substations.**

† Reg. Trade-mark of General Electric Company.

First with Floating Power

ALWAYS **QUIET**...ALWAYS **QUICK**

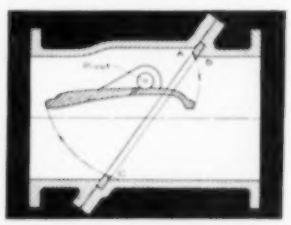
CHAPMAN

Tilting Disc Check Valve

You hear a lot about floating power these days. But Chapman Tilting Disc Check Valve has had it for quite some time. In fact Chapman was the first to have it . . . the first to have it in a valve . . . a feature that means much more to you in performance, much less to you in costs.

With Chapman's Tilting Disc Check Valve the "Airfoil" disc floats on the flow. When the flow is on, the disc balances perfectly . . . and quietly. There's never a flutter. No vibration. No trouble with head loss or flow resistance. And after the flow subsides the disc automatically drops to a closed position. The closing is fast. The closure is tight. No slamming. No banging. No damage to valve or system. No scraping or wearing of disc and seat. It all adds up to top performance and lowest maintenance and replacement costs even under severe operating conditions.

For handling fluids or gases under a wide range of pressures, always specify Chapman Tilting Disc Check Valves. They're available in iron or steel. Explained in full in our Catalog 30-A. Yours for the asking. Write.

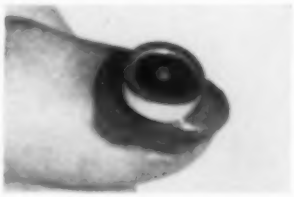


Cross-section of the Chapman Tilting Disc Check Valve illustrating the way that the balanced disc is supported on the pivot, with arrows showing the travel of the disc. A feature of the design is that the disc seat lifts away from the body seat when opening, and drops into contact when closing, with no sliding or wearing of the seats.

The CHAPMAN Valve
Manufacturing Co.
INDIAN ORCHARD, MASS.

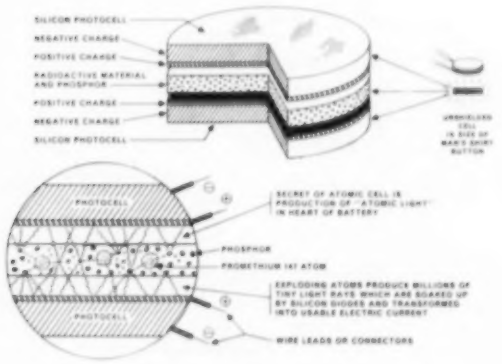
TIMELY COMMENTS

Those Miniature Batteries . . .



THE world's first electric watch announced by Hamilton several months ago was interesting enough in its own right—but the "small-button" size battery that makes it go "for over a year" was even more interesting to engineers. Automation enthusiasts have been doing more than dreaming about uses for such a small dependable battery in miniaturization of controls. Hamilton uses the "Eveready" W-307 energizer produced by National Carbon Company, a division of Union Carbide and Carbon Corp.

Weighing but 1/20 of an ounce, the energizer is 0.440 in. in diameter and only ¼ of an inch thick. It is non-magnetic and occupies a volume of 0.31 cubic centimeters. Nominal voltage rating is 1.5 volts and it provides a total of 60 milliampere-hours down to a cut-off voltage of 1.3 volts. It employs the standard dry-battery ingredients, but in a highly refined form. Case is positive and zinc electrode is negative.



Nuclear-Powered Battery

Elgin National Watch Company and Walter Kidde Nuclear Laboratories, have recently announced joint development of a miniature nuclear-powered battery capable of delivering continuous electrical power for at least five years. It is about the size of a thumb tack head and utilizes the decay energy of a beta-emitting radioisotope as its source of energy.

Battery is not yet commercially available but will eventually be used in miniature radios, warning receivers and probably in wrist watches. Developers claim the atomic-powered battery is completely safe for extensive personal use without special precautions.

799 Ideas "Brainstormed" . . .

ALMOST anybody with experience in industry can figure out how to increase manufacturing capacity. The trick is to come up with facilities that represent the last word in efficiency, and to get the most for the investment entailed. In Louisville, Kentucky, Tube Turns is doubling the size of its main plant. Expansion plans are being evolved in a series of brainstorming sessions that often produce newsworthy results.

The term "brainstorming" describes a group creative thinking process. It was coined by Alex Osborne of Batten, Barton, Durstine & Osborne, Inc., an advertising executive. The technique is used extensively by industry to harvest fresh ideas.

In Tube Turns' brainstorming meetings a plant layout board with proposed buildings and machines scaled to a quarter of an inch is available for inspection. Participants are urged to let their imaginations soar. All ideas are welcome and criticism is barred. Afterward the ideas are evaluated and the many good ones are turned over to the company's management and engineering staffs.

In eighteen brainstorming sessions the employees of Tube Turns have submitted a total of 799 ideas, many of which are being adopted.

Borden Grating for Bridges and Roads

- **MAXIMUM TRACTION** — greater safety, cuts accumulation of ice, snow, oil or grease.
- **EASY TO INSTALL** — engineered in conveniently sized units for easy installation.
- **EXTRA STRONG** — reinforced, designed with maximum safety factor.
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INDUSTRY SPEAKS

SOUTHERN POWER AND INDUSTRY

Synthetic Fibers . . . . A Southern Industry

A BRIGHT FUTURE for an expanding range of synthetic fibers to serve a wide variety of new end uses was forecast by Dr. Frank J. Soday at the meeting of *American Institute of Chemical Engineers* at White Sulphur Springs, West Virginia.

DR. SODAY, vice president and director of the Chemstrand Corporation's Research and Development Divison and president of the Southern Association of Science and Industry, predicts that the annual consumption of synthetic fibers will increase to 1.1 billion pounds by 1965 and to four billion pounds by 1975. Current use of synthetic fibers (not including cellulosic fibers such as rayon) is just under half a billion pounds per year.

Dr. Soday said, there are nine major synthetic fibers made from polymers derived from chemical raw materials. He listed these the acrylic fibers Acrilan and Orlon, the polyamide fibers Carprolan, Nylenka and nylon a polyester fiber, Dacron and the vinyl fibers Dynel, Saran and Vinyon.

In addition, he said, new fibers recently announced include the acrylics Creslan, Darlan and Zefran, a new nylon known as I.R.C. nylon, and a vinyl fiber, Verel.

Dr. Soday pointed out that "the manufacture of synthetic fibers is almost wholly a southern industry, and its rapid expansion indicates that it will become one of the most important manufacturing operations in the South."

Although produced by different companies and by different processes, most of these new synthetic fibers share certain properties in common. They have good heat insulating properties and are finding widespread application in the apparel field.

Synthetic fibers are not attacked by moths, mold, mildew, or insects, which is a great consumer interest. They do not absorb moisture to any appreciable extent, therefore, garments fabricated from them have wrinkle-resisting properties and can be given semi-permanent heat set creases. They generally have low specific gravities, which result in bulk with lightweight for excellent covering power.

With these desirable properties as a base, each fiber develops its own individuality through the possession of certain unique properties.

Among promising new or under development uses of synthetic fibers, Dr. Soday listed the fabrication of tarpaulins and tents with substantial weight saving, inflatable buildings supported by only a few ounces of air pressure, collapsible tanks and containers and "air springs" for cars and trucks.

The potential market for synthetic fibers in tarpaulins and tents alone, Dr. Soday said, is estimated at nearly 70 million pounds per year.

The inflatable buildings of synthetic fiber fabrics coated with plastic or rubber were first used to house large radar installations in Canada and Alaska where they successfully withstood winds of 150 miles per hour. And a building based on this same principle, he said, has recently been purchased for use as a hardware store.

By 1960, according to Dr. Soday, it is predicted that 90 per cent of the trucks and buses produced will be using the "air springs" and their increasing use in passenger cars is also anticipated. The "air springs" system uses a coated synthetic fabric bellows as a suspending and shock absorbing member.

A Uniflow System for Handling Wood Refuse

By DENARD L. GUSLER, P. E.
Clark, Buhr & Nexsen
Architects and Engineers
Norfolk, Virginia

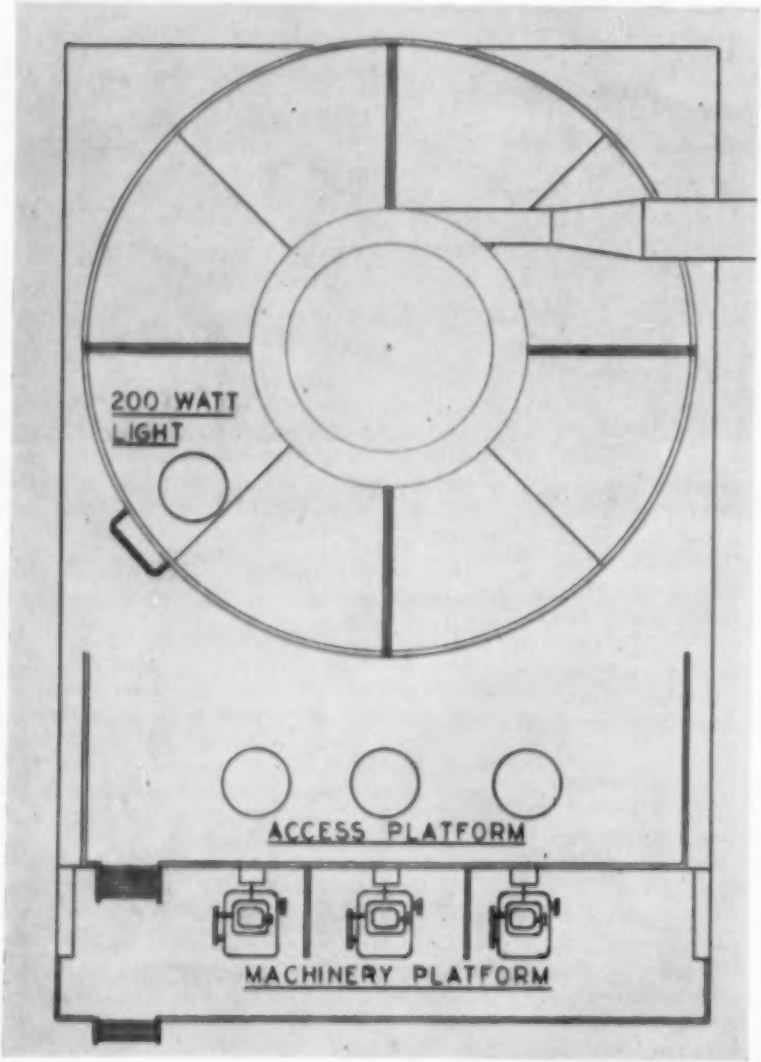


Fig. 1. Plan view of system

STUDY of satisfactory systems for storage and handling of wood refuse has interested me for a good many years and has resulted in several successful installations that have established excellent performance records.

Each installation presented problems that were unique, and solutions did not come easy. Frequently a trial and error method was necessary and success achieved partly by accident. There is no proved formula for a wood storage and handling system.

The system that is presented in this article is a composite result of many experiments. A method is presented whereby the average furniture factory utilizing kiln dried wood in its manufacturing process can materially reduce losses resulting from ineffective disposal of wood refuse.

Components

The problem of a storage and transport system for wood refuse may be resolved into the following basic components:

1—Transport from the factory to usable storage.
2—Storage of the waste product.
3—Removal of the waste product from storage.
4—Disposal of the waste product thru a by-products process method or by combustion for steam or power generation.

Considerations

Pertinent considerations involved with each of the foregoing are as follows:

1—Transport from the factory to usable storage.

Since wood refuse is normally in the form of fine sander dust, shavings and sawdust that are readily transportable by a pneumatic dust collector system, it follows that other refuse in the form of sticks, blocks and scrap should be pulverized to a fineness that will permit transport by utilizing the basic pneumatic transport systems necessary for the factory operation. The pulverized wood would then be in a condition suit-

able for processing as compressed chipboard or suitable for burning in the furnace of a steam generator to produce steam for heat and power.

2—Storage of the waste product.

Many types of storage have been tried. Wood refuse storage is extremely difficult because wood shavings and chips will entwine under pressure and become very hard to separate. This condition causes arching in the storage bin over the usual screw, belt or chain conveyor.

Vibration has been used on storage bins of the steel type with some success but generally vibration will cause settling of the refuse, and the problem of separation is intensified rather than solved.

Agitators of various types have been used with some success in storage bins but generally require considerable horsepower and should be avoided where possible.

Fire in the storage bin resulting from direct communication with the combustion space in a furnace or from a spark in the pneumatic transport system is a continued threat and a very real hazard.

3—Removal of Wood Refuse from Storage.

This is the most difficult operation herein discussed. A method that has been in use for years is a small capacity bin, small at the top and large at the bottom, utilizing a nest of screws. This method is costly and requires excessive horsepower.

Another method utilizes drag chains and flights conveyors that are run through the bottom of a very long storage bin for refuse removal and across the top of the bin for distribution of refuse. Here again considerable horsepower and equipment is required, and usually a pneumatic recirculation system is necessary.

Each of the foregoing methods permits direct communication with the combustion space when a furnace is involved.

4—Disposal of the Waste as a By-Product, or by Combustion.

The problem of waste utilization will not be considered in this article because several manufacturers have developed equipment for chipboard waste recovery, and boilers for burning wood refuse have long been available.

Uniflow Handling System

The Uniflow System for Handling Wood Refuse is a method whereby a uniform flow of refuse from the factory to the furnace of a boiler, or the process plant is possible. A side elevation of the basic components of the system is shown in Figure 2.

A pneumatic dust collector of the cyclone type receives wood refuse from the factory and discharges it to the wood storage bin. The air used in transport discharges through the top of the

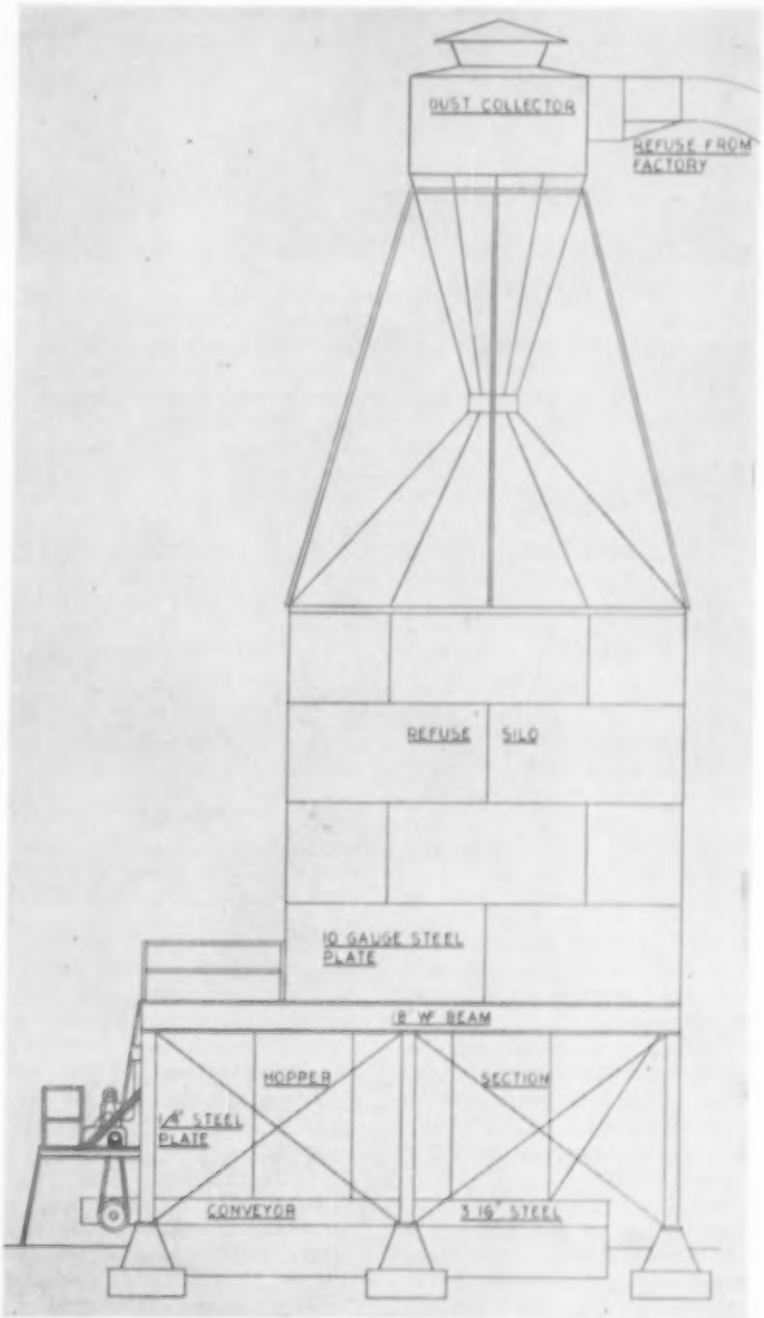


Fig. 2. Right-side elevation

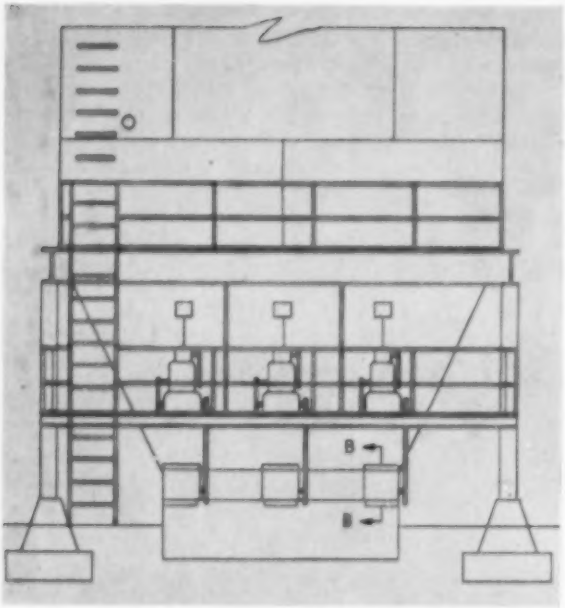


Fig. 3. Front elevation

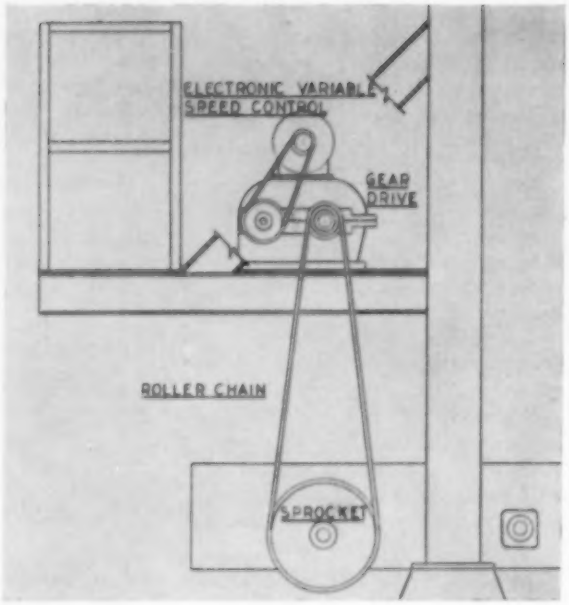


Fig. 4. Conveyor drive mechanism

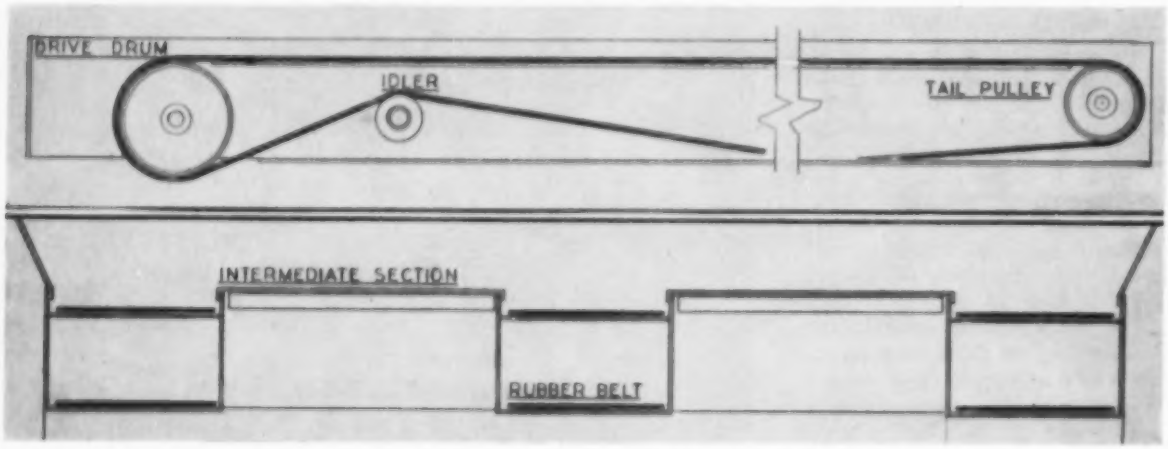


Fig. 5. (above). Conveyor detail, Sect. B-B of Fig. 3

Fig. 6. (below). Section through conveyor assembly

collector. A cone in the collector is adjusted to provide a minimum downward pressure at the throat of the collector.

The bin is a circular container of welded steel construction fabricated like a water tank. The bin may be increased in diameter or height as necessary to provide increased storage.

The bin is independently supported by an all steel hopper resting on a structural steel frame and concrete foundations.

A plan view is shown in Figure 1. An access ladder is provided to the roof of the storage bin and the roof is equipped with an observation hatch and a suitable flood light. There are many methods of measuring the level in a wood storage bin, but only one works—a method whereby the operator can physically inspect the interior of the bin.

An access platform is provided with openings just above the point where the conveyors leave the storage bin. This arrangement is necessary to permit removal of a large stick or block that will occasionally be carried into the transport system.

A machinery platform is provided as shown.

A front elevation is shown in Figure 3. This view presents the general arrangements of the conveyors and hopper sides. It will be noted that the hopper sides are sharply sloped.

Section B-B is shown in Figure 5 and presents in detail the surprisingly simple belted conveyor. The conveyor belt is driven by a steel

pulley with an idler pulley to increase the degree of wrap and a tail pulley to adjust and equalize the belt tension.

At first glance it would appear that the pressure of the wood refuse on the surface of the rather large belt area would generate enough friction between the belt and the flat steel surface on which it rides to break the belt. In service, however, sufficient fine sawdust sifts under the belt to create a rolling surface that will eliminate harmful friction.

A section through the conveyor assembly is shown in Figure 6. The conveyor housings rest on a concrete foundation and actually supports the weight of the fuel stored in the storage bin. A small percentage of the weight is supported by the walls of the hopper and the resultant weight causes the fuel to converge on the belts.

Arching Action

It would seem that a flat belted surface such as shown would result in a considerable arching of the fuel above the belt—and it does. However, the belt conveyor design is predicated on the realization that arching is inevitable. Consequently, a large area is provided and is in motion at all times. Arching will occur in spots throughout the length of each belt. However, there is no systematic continuity of arching that will result in an interruption of the flow of wood refuse. While the refuse is arching in one area on a belt, fuel will be traveling through the arch from another area, then gradually the arch will collapse. Actually, the fuel flow is amazingly uniform.

Two or even one belt could be used in lieu of three belts as shown. However, the most satisfactory arrangement, as proved by actual installations, is three belts. In an extremely large diameter bin four or five belts might be desirable. It is necessary to create a slowly moving bottom in the bin and rely on friction for movement of the wood refuse.

Conveyor Drive

The conveyor drive mechanism is shown in Figure 4. It is called a stoker drive because the drive can be arranged to feed a boiler furnace.

The speed of the conveyor drive must be reduced to less than one revolution per minute hence a considerable gear reduction is necessary. To effect a variable speed arrangement for firing a furnace, an electronic variable speed drive can be provided, actuated by steam pressure and utilizing a magnetic coupling. Each belt can be driven by one horsepower or less.

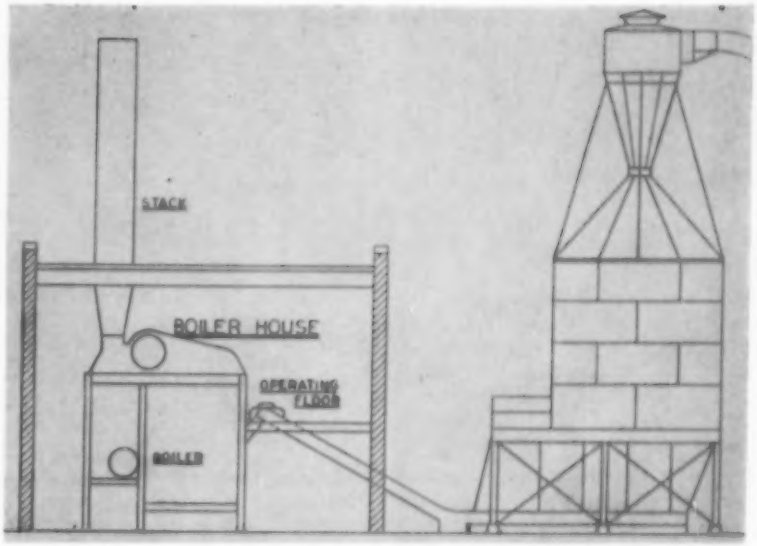


Fig. 7. Uniflow Assembly adapted to boiler

The Uniflow Assembly shown in Figure 7 is adapted to a water wall furnace steam generator with the drive mechanism on the operating floor.

With this arrangement the driven conveyor belt is extended thru a pulley arrangement to actually feed the wood waste into the boiler furnace.

It will be noted that the Uniflow Assembly can be in a separate building, or in a part of the main building.

Basic Advantages of Uniflow System

1—Wood refuse can be stored in bulk and removed as needed for process or combustion. Thus a factory can store fuel during the day for use at night to generate steam for drying lumber or building heating.

2—The wood refuse storage bin is of fireproof construction and designed so that a fire in the bin cannot do serious damage. Any fire in the bin can be removed by emptying the bin.

3—Fire can originate only from the factory and this is an extremely rare occurrence.

4—Wood waste or refuse can be removed continuously from the storage bin at varying rates of flow with but a fraction of the horsepower usually required.

5—The Uniflow Assembly can be located in any relationship to the factory or to the building utilizing the waste product. Thus the Uniflow System is readily adaptable to existing factory installations.

North Carolina Engineer Describes Coal-to-Gas Conversion

Controls Efficient and Safe

By SAM BOYER, Wisteria Hosiery Mills, Inc.

CONVERTING one of their 125 hp, two-pass, HRT boilers to natural gas combustion equipment, and leaving another boiler of same capacity on coal-firing for standby service, enabled Wisteria Hosiery Mills, Inc., of Gastonia, N. C., to solve their problem of handling and storing coal.

The conversion to gas, which is on the Optional Interruptible Contract basis with the Public Service Company of North Carolina, is proving quite satisfactory. This company maintains a fleet of service cars that are equipped with two-way radios, and are thereby enabled to render quick service 24 hours per day in case of emergency breakdowns of the gas combustion equipment at industrial plants. In case of abnormal demand by gas users, change to coal burning must be made in two hours after notice.

Advantages of the coal-to-gas conversion include: lower operating and maintenance costs; elimination of coal and ash handling; better house-keeping both inside and outside of the plant by preventing objectionable fly ash and soot; and improved community relations by smoke nuisance abatement.

Safeguards and Controls

By using electronic gas combustion safeguards, combustion control is entirely automatic. This system eliminates the employment of two regular firemen required for coal firing, thereby saving approximately $4,200 annually. Further savings on stoker maintenance and furnace refractory outage will approximate $200 yearly. The saving is partially offset by the 10% higher cost of gas as compared to coal.

The electronic gas combustion safeguard unit, which is a part of the Kinetic Gas Burner system designed by the Webster Engineering Co. is shown in Fig. 1. The Minneapolis - Honeywell Protectorelay, a component of the unit, is shown mounted in the center of the assembly above.

The Protectorelay is an electronic combustion safeguard, which employs the flame - rectification principle for instantly responding to the presence or absence of flame in the burner pilot. Absence of flame, or an internal or external circuit failure which simulates absence of flame, will cause the Protectorelay to lock out the safety-switch. This closes the main gas valve if open, or prevents opening if closed due to a flame-simulating component

Fig. 1. Gas combustion safeguard

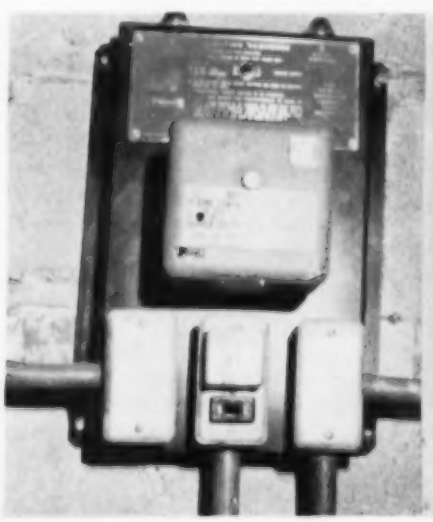
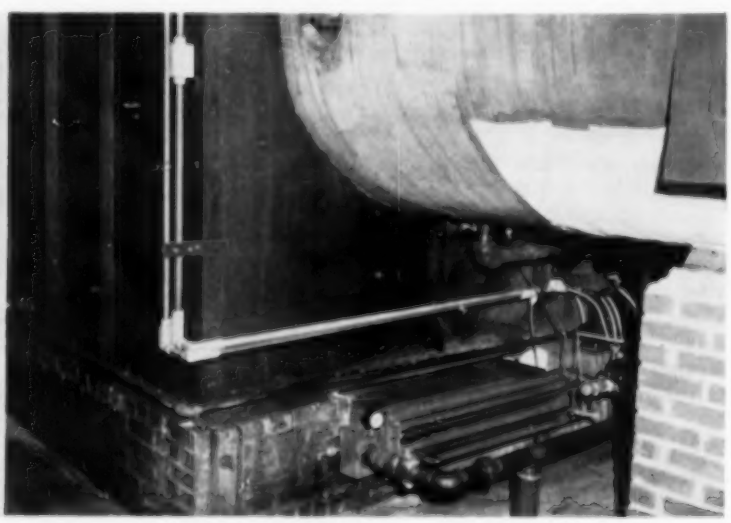


Fig. 2. Burner and control circuits



failure. An alarm system gives warning, both in the steam plant and in the factory, when the electronic combustion safeguard fails, and closes the main gas valve.

The photograph (Fig. 2) shows the alarm system conduit with switch, and also the control system conduit, which are connected to components of the gas burner. The actual gas burner unit is mounted in front of the fire-box, instead of the rear position below the fire-doors. This is opposite to the end where the stoker was first installed for coal firing. The 2" gas main, and gauge are clearly shown in the illustration.

Photograph (Fig. 3) shows the firing valve on extreme left and ahead of gas pressure gauge; the Webster Kinetic Gas Burner is shown installed in rear of controls; a slow opening General Controls magnetic diaphragm valve, with louvre operating lever, appears in the center. Next is the Western Automatic Safety Valve, having the Factory Mutual stamp of approval, installed in the 2" gas main. This valve instantly closes when the combustion safeguard (Protectorelay) fails, and can be opened only by manually resetting the trip lever (shown in the photo) after the Protectorelay has been recycled following the automatic closing of the main gas valve.

On the right is shown the Detroit "Maxitrol" Regulator for controlling incoming gas pressure. The main gas manual cut-off valve is installed ahead of all equipment,

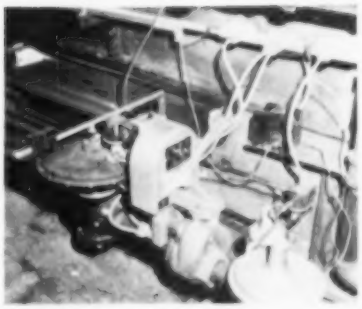
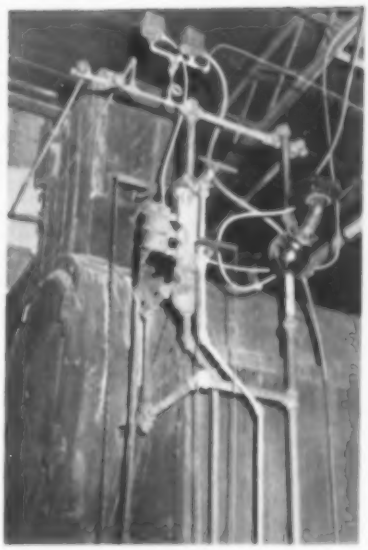


Fig. 3. Note compact arrangement of burner and safety control equipment. Fig. 4. (right) shows high pressure pump control and low water cut-off.

but the supply line for the pilot burner is bypassed through a Pittsburg Equitable regulator, which also has a manual cut-off valve. The gas supply for the pilot burner is equipped with a General Controls relay valve, which is interconnected with the Dongan ignition transformer. The line from the outside American Meter to inside supply is 3" piping.

The McDonnell high pressure pump control, with low water cut-off inter-connected with gas burner alarm is shown in Fig. 4. Two Minneapolis-Honeywell Pressuretrols are shown mounted on top of the water column.

The low water cut-off on the boiler pump control acts to cut off the gas burner when the boiler water drops to a pre-determined level, thereby preventing damage to the boiler. When such action does occur, the alarm system also



operates to give warning signal as was explained for the flame-simulating component failure.

Two controls, one set at 40 lb, and the other set at 115 lb, are installed on the gas fired boiler. They are controlled by a selector switch manually operated. During peak loads, the switch is "UP" to the 115 lb Pressuretrol during light loads, the switch is thrown "DOWN" to the 40 lb Pressuretrol.

Both of the boilers are fully insured, and are operated in full conformity with N. C. State Laws governing the same.

Flexible cable connects all wiring from the rigid conduit to the various controls; this prevents any vibration from damaging or otherwise causing erratic operation of such equipment.

Texas Style Egg

THE OBJECT causing the perplexed look on George Gage's face isn't a Texas-style ostrich egg. Someone did "lay an egg," however. This object is a 10" diameter heat exchange sphere of aluminum oxide which Norton Company made as a special order for a company doing some unusual research work. However, in making out the order, someone erroneously specified a 10" ball instead of a 1.0" ball.

George now has the sphere in his Norton laboratory office and is looking for suggestions — serious ones — as to what he should do with it.

Modernization and Automatic Controls Make Old Storage Plant Young

AFTER purchasing the Mutual Cold Storage Cooperative in 1954, the Rockingham Poultry Marketing Cooperative at Broadway, Virginia, planned an extensive modernization program. Refrigeration is used in many ways—with excellent efficiency.

Production in the poultry plant has increased until 4,500 chickens can be handled per hour, using three conveyor lines. Other conveyor lines are devoted to turkeys. The extensive fruit cold storages are used for apples, potatoes, peanuts, etc.

Poultry Freezing

The concrete vats in which the birds are chilled with crushed ice are now supplemented with movable tanks. Poultry is Acronized while being cooled in the ice water. This treatment uses the wide spectrum antibiotic — aureomycin for lengthening the shelf life of fresh poultry products. The birds are later protected with Cryovac latex bags, applied under a vacuum.

Last year a new quick-freezing tunnel was installed, which increases the freezing capacity to 140,000 lb per 12 hours. The new tunnel has spiral-finned coils and propeller-type fans (made by Hartzell), mounted along one side. These 16 fans use a total of only 24 hp, deliver 110,800 cfm of air, and are readily accessible. The finned coils appear in the photograph just beyond the fan blades. The air velocity is such that the coils are kept free of excessive frost.

It is only necessary to defrost the tunnel every two or three weeks. The new tunnel is located on the main floor of the cold storage building. The tunnel itself was built inside of a room held at zero.

Air Cooling Units

The four new air-cooling units installed in the freezer storage rooms have spiral-finned coils, arranged for automatic defrosting with hot ammonia gas. A central panel has mounted on it all the necessary controls for defrosting the four air units. The actual defrosting is done in a series of steps; the refrigerant feed is first cut off by the closing of electric control valves, and the ammonia in the coil is pumped out for about 20 minutes.

Hot gas is next introduced under sufficient pressure to blow into the accumulator any remaining liquid ammonia, and to defrost the coil.

A Food Processing Center

The famed Shenandoah Valley of Virginia traces its history back to 1716, when Governor Spotswood and his party, called the Knights of the Golden Horseshoe, climbed to the top of the Blue Ridge and descended to the river. Agreements later made with the Indians permitted the Great Valley to become the frontier, during the time of George Washington. Colonel Washington collected troops and supplies at Winchester and nearby points for the campaigns of the French and Indian Wars (1754-63).

A century later the Valley rang with the names of such heroes as Stonewall Jackson, Philip Sheridan and R. E. Lee.

In recent times, men like Commander Richard E. Byrd and his brother Senator Harry F. Byrd, have brought renewed fame to this section of Virginia. Senator Byrd is now the largest grower of apples in the world, and Winchester is the greatest center of the apple industry. The Apple Blossom Festival held there every year attracts many thousands of visitors.

The remarkable growth of the fruit industry around Winchester has been paralleled, farther up the Valley, by poultry and livestock raising. Between the little towns of Broadway and Timberville, in Rockingham County, there has sprung up an impressive center for the processing and storing of farm products. Here we find grouped together a number of highly successful cooperatives.

The Mutual Cold Storage was the first to be established in the area and in a sense made the others possible. This was started in 1916 as a very small ice and cold storage plant. Twenty-two years later, the Mutual plant included a cold storage building six stories high, a locker room with 1,200 compartments, and a quick-freezing tunnel. It has been growing ever since.

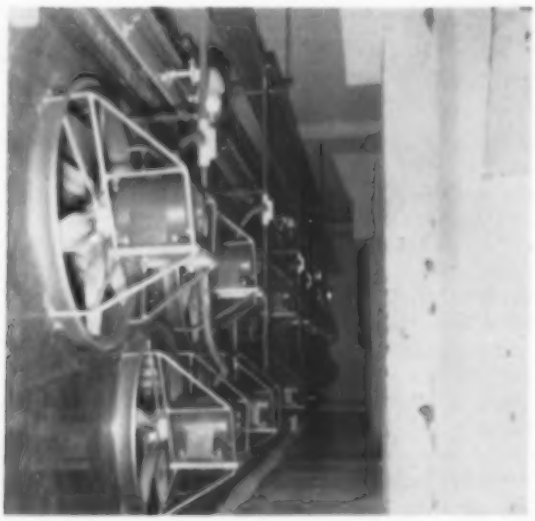
After a few minutes, the frost is melted off and drained away. The hot gas is then shut off, and the necessary steps are taken to put the unit back into service before the temperature in the room suffers any appreciable loss. Recording thermometers show that remarkably uniform room temperatures are maintained.

Compressor Scheduling

To secure uniform suction pressures, while holding different temperatures on widely varying loads, the plant has several of its 13 compressors under automatic control. Three distinct suction pres-

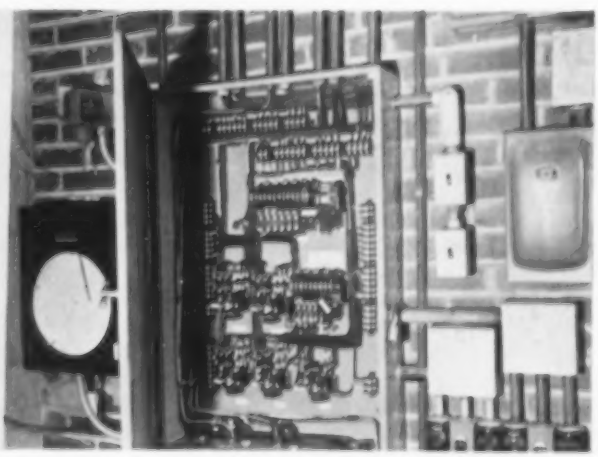
The quick-freezing tunnels are inside the cold storage rooms of this building.

New air-blast Frick-freezer has spiral-finned cooling coils.

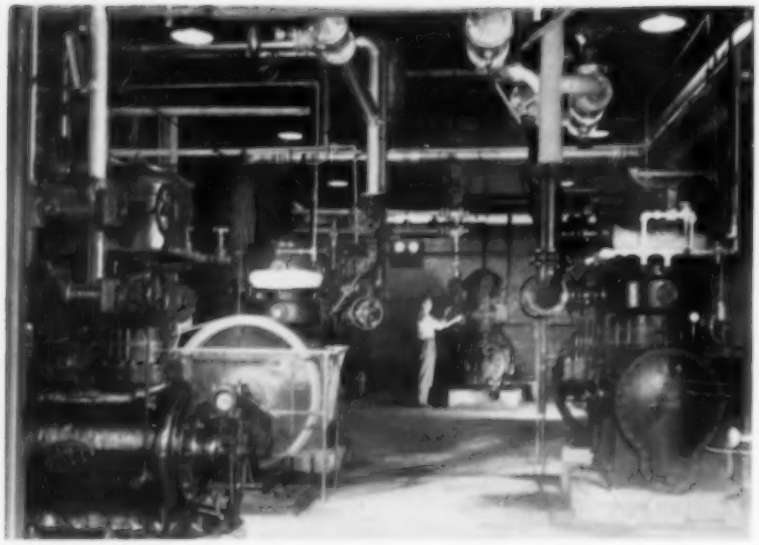


Propeller-type fans circulate 110,900 cfm of air but use only 24 hp.

Frick air cooling unit with automatic hot-gas defrosting, in typical freezer storage.



Automatic program-clock controls which defrost four air cooling units in freezer storages.



New booster and second-stage compressors balance the load under automatic control.

sures are carried, for power economy, and as much as possible of the work is done on the "Booster" or two-stage principle. The lowest suction is brought from the quick-freezing tunnels; the second from the freezer-storage rooms; and a third from the ice-making system and fruit storage rooms. This high-suction line includes the gas discharged from the booster machines.

Three boosters carry the quick-freezing load; an 11½ by 8 and a 13¼ by 9, both with hand starters, are equipped with low-pressure cutouts set at 16 in. of vacuum; a new 15 by 10 booster has automatic controls which start it at 9 in. of vacuum and take it off the line at 13 in.

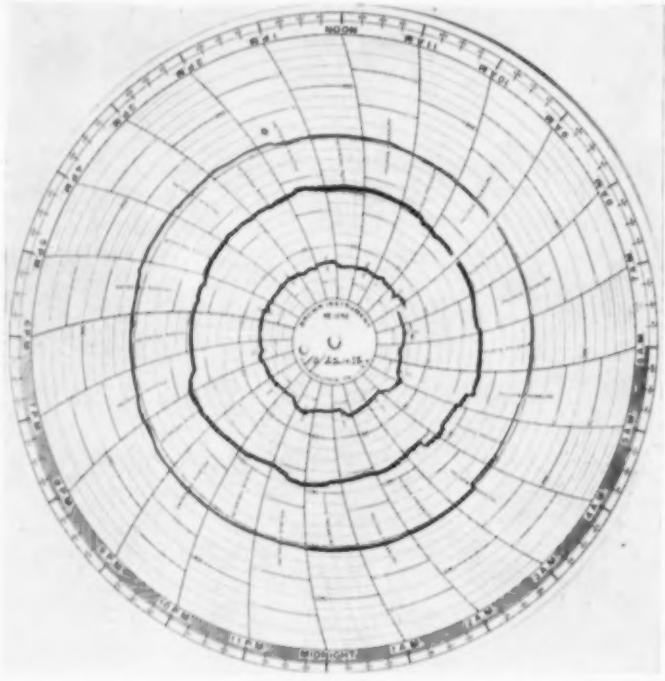
The intermediate suction from the freezer storages is carried by an 11½ by 8 booster under full-automatic control, set to start at zero pounds gauge and to stop at 5 in. of vacuum.

The high-pressure suction is divided among nine machines. There are two 10 by 10's running at 360 rpm, and two others of the same size at 300; a 9 by 9 and a 6 by 6 each run at 400. These six machines are hand-operated. An 8 by 8 running 400 rpm goes on at 20 lb suction and off at 17, automatically. Another 8 by 8 running at 300 starts at 17 and stops at 15 lb, while an 11 by 10 operating at 360 rpm cuts in at 15 and off at 13. This arrangement assures maximum efficiency without increasing labor costs. The 11 by 10 compressor is connected to all three suction lines, and is equipped with cylinder-wall thermostats and an oil pressure safety switch, among other controls.

All of these machines are the Frick two-cylinder enclosed type, and all except one are driven by electric motors. Most of these motors are of Ideal manufacture. One 10 by 10 compressor is direct-connected to a Fairbanks-Morse Diesel engine of 150 hp, which also drives a 96 kw alternator. This generator will take care of the auxiliaries throughout the plant if the main source of electric current fails temporarily.

The total refrigerating load, in round numbers, is 600 tons. Six vertical shell-and-tube condensers, four of 38 in. dia and two of 32 in. dia, 14 feet high, keep the head pressure between 130 and 160 lb, according to the season. The pumps which feed the river water to the condensers were furnished by Fairbanks-Morse, and have a total capacity of 3500 gpm.

That the refrigerating system is well balanced and economically operated is obvious from the recorded pressure chart for a typical day and night.



Recording thermometer chart showing uniform handling of quick-freezer and high-temperature suction loads, also condensing pressure, in autumn.

Why HOT SPRAY Protective Coatings

HOT SPRAY is a process in which controlled heat is applied to finish materials to maintain constant viscosity. Viscosity is reduced by the heat far below any workable level practical with cold spray. When hot sprayed material is atomized, fast solvents evaporate between gun and surface. Since most of the solvents are evaporated, a heavy bodied film is deposited.

The maintenance program of a Gulf Coast chemical plant is backed up by over 2,000,000 sq ft of coverage. Their maintenance engineers have used the hot spray process for several years and report a 300% longer film life and a 30% reduction in labor cost with the hot spray application. Other advantages reported were more build per coat (fewer coats required); no damaging drift from overspray; elimination of thinners; easier application; improved working conditions for spray men; reduction of sagging; better film continuity (more dense film and better flow-out); and a build-up of film thickness on edges of the work.

As an aid to plant engineering personnel the following questions and answers have been adapted from a 28-page bulletin, *Why Hot Spray*, of the Spee-Flo Company of Houston, Texas. This company manufactures a complete line of hot spray heaters.

Why does controlled temperature application produce constant viscosity?

The viscosity of finishing materials varies with temperature change. A room temperature change of 60° to 75°, for example, varies viscosity as much as 33 1/3%. With a thermostatically controlled paint heater, temperature is held constant and viscosity cannot change. Painters work with the same materials hour after hour, day in and day out.

What is the hot spray range?

The hot spray range is that range (150°-170°) in which temperature variations produce little or no viscosity variation.

Why operate in the hot spray range?

Although all the advantages of constant viscosity can be obtained at any selected temperature using a heater, maximum benefits of the hot spray process combine both constant viscosity and maximum solvent evaporation between gun and surface. Both of the maximum benefits occur only within the temperature range of 150° to 170° . . . the hot spray range. This produces the hot spray high solids film deposit, faster dry, minimum shrinkage, etc. Equipment is designed to give accurate control at any level.

Why use heat to reduce viscosity?

Thinners reduce viscosity but also reduce the coverage proportionately. Heat reduces viscosity, but increases coverage because of the evaporation of the solvents before they reach the surface. This same evaporation cools and thickens the high solids film.

Why do solvents evaporate between the gun and surface?

Fast solvents have been heated beyond their evaporation point while in the system, yet cannot escape while under pressure. Immediately after atomization, however, these fast solvents are dissipated in the atmosphere. A heavy bodied, cool film results.

How does hot spray produce material savings?

Material savings . . . that is, the use of less paint for equivalent film thickness . . . can be produced with hot spray because viscosity is reduced and, therefore, less atomizing pressure is required. Lower atomizing pressure means less bounce-back and less overspray. Overspray reduction spells material savings.

Does hot spray always produce material savings?

No. If the heat is simply used to replace thinner and viscosity is not reduced below cold spray

Why Hot Spray Protective Coatings? (Continued)

viscosity, then lowered atomizing pressures cannot be employed . . . thus, no material savings. Quality control, of course, can still be expected.

Does hot spray mean hot paint is being sprayed on the surface?

No. The material is delivered through the gun at approximately 160°. This heat-reduced material is rapidly cooled between the spray head and the surface by the evaporation of "fast" solvents and by contact with the atomizing air.

Why bother to heat paint if it reaches the surface cool?

This is the basic principle of hot spray by which the heat-reduced material loses most of its solvent content before striking the surface, leaving a cool, heavy bodied paint film.

What is the advantage of a cool, heavy bodied film?

The cool, heavy bodied film is one in which most of the solvents have been evaporated. Result: a film that dries more quickly and is nearly "sagproof." One coat usually replaces two.

Is the hot sprayed film better?

Yes, film integrity is considerably improved with hot spray because the condition known as "pin-holing" . . . caused by solvent escape from the deposited film . . . is greatly reduced or eliminated. Less solvent in the film deposit means less solvent to escape . . . thus, a smoother, denser film with longer life.

What about drying time of hot sprayed materials?

Initial drying time is much more rapid for most hot spray material, because much of the solvent evaporation has occurred prior to surface application. Therefore, the finish tends to dry faster.

How Coatings Are Applied

Does hot spraying require special training?

There is a difference in hot spray application. It's easier! It requires fewer strokes, produces greater build . . . without runs and sags. Painters are enthusiastic because hot spray's constant viscosity control insures all-weather, trouble free application. Major reduction of overspray means the painters "eat" less paint, too!

Is there a particular pressure that is generally satisfactory for hot spray?

No. By observing the rule of good atomization, the atomizing pressure for hot spray will usually be about 25% less than for cold spray.

What atomizing pressure should be selected?

The well known rule "The best pressure is the lowest pressure" applies on the assumption that good atomization is not being sacrificed. Therefore, the best atomization pressure is usually the lowest pressure at which good break-up (atomization) of the material is maintained.

Should conventional materials be hot sprayed without any reduction?

It can be done, but frequently the best course is to use a combination of heat and thinners.

NEW Reader SERVICE

SOUTHERN SALES SERVICE

Directory of Southern and Southwestern manufacturers' agents representing SPI advertisers is featured in this issue — pages 113-120.

Tabulation (by state and city) is published as a special service to plant engineering and purchasing department personnel.

Are special materials required for hot spray?

Any material with a viscosity reducible by heat will give better results when sprayed hot. Standard enamels, lacquers, red lead and oil paints can be hot sprayed successfully without change. Some standard materials may require application at reduced temperatures, and, for these materials, thermostat adjustment will supply the selected temperature.

Is there a recommended viscosity for materials to be hot sprayed?

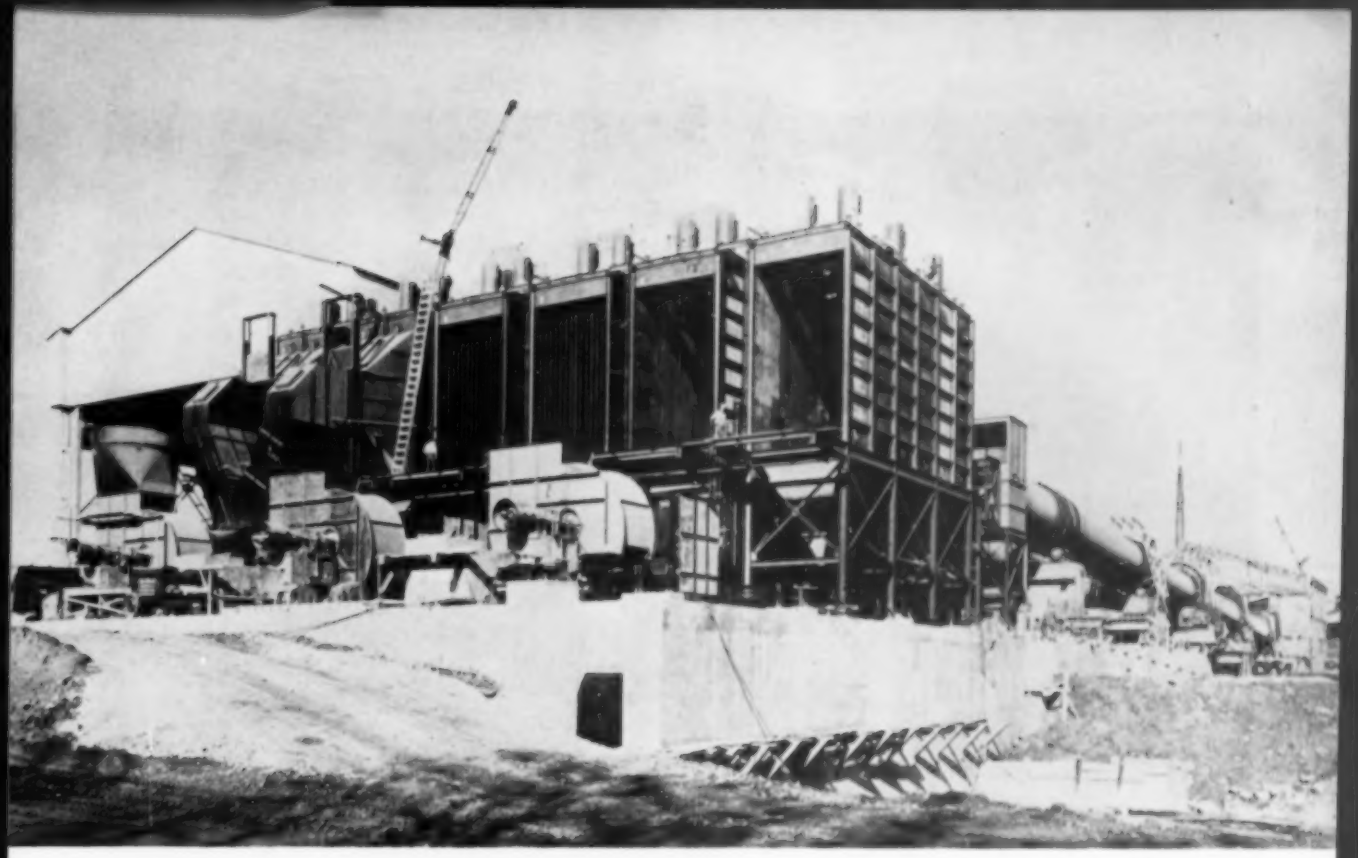
Most conventional paints, lacquers, enamels and vinyls are measured by the number of seconds (by the clock) that it takes for them to flow through a hole in the bottom of a Zahn No. 2 or a Ford No. 4 viscosity measurement cup. These cups will empty themselves of the same material in approximately the same length of time. The number of seconds required is the expressed viscosity of the material. Average workable viscosity for cold spray is 18 to 24 seconds. Materials are heated and reduced to the same or lower level. Hot spray materials, before heating, may be anywhere from 18 to 180 seconds . . . although some materials are subject to greater viscosity reduction under heat than others.

How do enamels work with hot spray?

Conventional industrial enamels are usually hot sprayed very effectively with all the advantages of time and material economies and quality control improvement. Use approximately one-half the reducer recommended for cold spray . . . or consult with your material supplier.

What about hot spray Vinyl application?

Some conventional vinyls may be hot sprayed with improved build, better coverage, denser film and faster application. Solvent balance in some vinyl formulations may be critical, however, and your vinyl supplier should be consulted for best results with a formulated hot spray vinyl.



Precipitators and mechanical collectors to give 95% dust removal efficiency for cement plant.

Big Electrostatic Precipitator Installation

Maryland plant designed for cleanliness and efficiency . . .

LEHIGH Portland Cement Company will soon start operating its new plant at Union Bridge, Md. This big battery of electrostatic precipitators will clean dust-laden gases before they escape into the atmosphere.

Designed by engineers in the Metal Products Division of Koppers Co., Inc., which produces such equipment for a variety of industries, the installation consists of six, three-field units, each approximately 25 ft high, 45 ft long and 12 ft wide.

Operating in conjunction with mechanical dust collectors, the precipitators are designed for an over-all dust removal efficiency of over 95%. Each of the three kilns they will serve — a pair of precipitators for each kiln — will produce 3,000 barrels of cement clinker per day, making the Union Bridge plant one of the largest in the East.

This photo shows the six precipitators in varying stages of construction. Outlet nozzles have been installed on the pair at left. The center pair are still open, but the collecting plates have been put in place. The pair at right are ready to receive the plates.

When the plant is complete, this view of the precipitators will be obscured by the stacks and electrical - control sub - station to be erected on the concrete foundation in the foreground.

Hoo-Done-It ? ? ?

A SOUTHEASTERN plant was having boiler room trouble and the coal supplier called in a Bituminous Coal Institute district engineer. He found that the coal bed was caked up and there was insufficient draft in the furnace. After checking the equipment he found that the forced draft fan was *rotating in the wrong direction*. After the necessary changes were made full steam pressure was obtained within a matter of minutes, and a satisfied coal customer was retained.

Side view of conveyor with pipe turner in middle of rotation.

North Carolina Engineer Tells How His Company Reduced Breakage

Specialized Handling Equipment

By D. W. SEWELL, Chief Engineer
Pomona Terra-Cotta Company
Greensboro, North Carolina

THE PROBLEM of handling the rather delicate ware in the manufacture of structural clay products has been a major problem. Clay products, when moulded are plastic in nature and are easily deformed. Practically all shapes produced require certain finishing operations, such as, trimming excess material, smoothing surfaces, and texturing. For years, this handling and finishing operation has been done by manpower.

Manpower can be effectively utilized in the production of small light shapes, but when the item becomes quite large (pieces weighing 1,000 lb are common) manpower is not practical for handling. Pomona Terra-Cotta Company was faced with the problem of handling 36" sewer pipe, each joint weighing 1,800 lb. Naturally, the idea of using manpower in production was out. A machine had to be designed to do the work previously done by men.

Sewer pipe is made by the use of a vertical extrusion machine working in conjunction with a die. The die has a cooperating former which forms the socket or bell end of the pipe. In operation, the former locks to the die and the extruder forces plastic clay about its contours. After a suitable time interval, the former is released from the die and the barrel of the pipe is extruded. When the pipe is of proper length, the extrusion machine is stopped and the pipe barrel is cut from the die. At this point, it becomes necessary to remove the pipe from the former and transport it to another location for further finishing.

Handling Machine

The machine we designed for such handling consists of six principle parts: Three elevating walking beams, a turning mechanism, a former board, and powered rolls. Specifically the operation is as follows: At some time during the extrusion of the pipe barrel, the extruder is momentarily stopped and the former is

lowered into a recessed pit below the floor level. A rectangular aluminum pallet, fitted with a boss like seat which conforms to the pipe bell, is conveyed by powered rollers to a position exactly in the center of the former. The rolls stop and the former is elevated thereby lifting the pallet or former board up to the suspended pipe, the former seat entering the pipe bell and resting upon its shoulder.

At the end of this operation, a walking beam is brought back in such a manner that two arms extend under the edges of the former board. The pipe is then cut from the die and the former along with the former board and pipe are lowered.

Since the arms of the walking beam are of a gauge less than the width of the former board, the board is intercepted by the arms in its downward travel. This operation is done smoothly by the skill of the machine operator. The walking beam with pipe and former board is then moved away from the press by air power. The distance it moves is determined by the fixed length of an air cylinder.

Turning Mechanism

At the end of its movement, the pipe along with former board is transferred to another similar walking beam which in turn places the pipe into a turning mechanism. It is necessary to rotate or up end a clay pipe because the inherent strength of the bell in its plastic state is not sufficient to support the weight of the pipe without deformation during the drying and firing operation. Whereas, if the pipe is rested upon the plain or spigot end drying and firing may be done successfully.

The turning mechanism simply rotates the pipe 180 degrees thereby resting the pipe upon its spigot end. At the end of rotation, the former board is removed from the bell end of the pipe. The pipe now resting upon a dryer pallet, placed upon the spigot end before rotation, is removed from the turner to a position where it can be transported by fork lift truck to suitable drying rooms.

To complete the cycle, the turner returns to its first position and places the former board upon the live rollers for re-use.

This machine has enabled Pomona Terra-Cotta Company to produce 21" through 36" sewer pipe with only nine men. The operation is faster and produces less rejects than the previous manpower method of 24 men utilizing a few simple rolls and levers.

End view of off-bearing beam with 36" pipe ready for transportation to dryers.

Atomic Trends

Big Plants Coming

By JOHN F. LEE
Professor of Mechanical Engineering
North Carolina State College

ATOMIC DEVELOPMENTS appear to be taking a new turn. Some of the practical limitations of proposed nuclear power plants are now receiving more realistic examination. There appears to be a real drive to achieve economic nuclear power and less satisfaction with the mere accomplishment of producing nuclear power. Specific types of nuclear power plants which have special application for certain regions are getting more active attention. Other uses of nuclear energy, long overshadowed by nuclear power, are sharing the limelight. The rapid appearance of nuclear testing and experimental facilities for industry has focused attention on the importance of these other uses.

One of the most significant events is a growing realization that the use of nuclear energy is an engineering problem and not one of theoretical physics. Indeed, because basic knowledge of the atom is still flimsy there is an urge on the part of the physicists to return to basic problems. At the same time engineers have improved their grasp of the nature of atomic energy and are now prepared to apply their unique skills in using present knowledge to expand its useful applications.

Nuclear Congress

A nuclear congress was held on March 11-15 at Philadelphia's Convention Hall under the coordination of the Engineers Joint Council. Leaders from science, engineering, industry, government, education, agriculture and other fields assembled to further the industrial uses of atomic energy.

Twenty engineering and scientific societies sponsored the conference at which there was an attendance of 3,000. An atomic exposition held in conjunction with the conference drew about 22,000 people. About 30% of the exhibitors were companies new to the atomic energy field. Approximately 130 technical papers were given during the four-day program.

John S. Sinclair, president of the National Industrial Board, noted that "never before have businessmen been able to attend three large integrated conferences and a trade fair on atomic energy within the same week. The Engineers Joint Council is to be congratulated for its efforts to eliminate unnecessary duplication of meetings in this field."

Foreign Commerce

Babcock & Wilcox Company has announced the signing of a contract with the Dutch Ministry of Education for the fabrication of fuel elements for a swimming pool reactor. The fuel elements will be fabricated in Lynchburg, Virginia. The reactor itself is being designed and built by American Machine & Atomics, Inc.

B & W also signed a contract to design and engineer a research reactor for Kernergie Hamburg of Hamburg, Germany. A separate contract is expected for manufacture and construction of the reactor. An earlier contract with Government of Brazil was negotiated for a swimming pool reactor.

World Fuel and Power

The Geneva Conference revealed some interesting figures on the projected world demand for fossil fuels based on equivalent tonnage of coal at certain assumed compound rates of growth (Table 1). Need for 52.9 million tons of coal per year is indicated.

Similar figures for the anticipated demand for electricity, and installed generating capacity for Great Britain projected to 1975 were given (Table 2).

STAR GAZING AND STARK REALITY have at times seemed to constitute opposite poles of the atomic energy prospect. Practical progress is being made, however, and economic power production seems a certainty. Physicists are still shooting for the ultimate goal — electricity directly from fission or fusion. But engineers are going right ahead with plans to take heat (any way they can get it) and convert it to electricity in a more or less conventional steam turbine cycle.

All of the predicated figures demonstrate clearly the desperate need for supplementary fuels on a world basis and especially in some European areas such as Great Britain.

Reactors in the South

The South has a fair share of the nation's reactor installations as shown by Table 3, recently released by the Atomic Energy Commission.

Effort Toward Economy

The Monsanto Chemical Company has announced an important new step toward the achievement of economic atomic power. Using organic materials for cooling and moderating nuclear reactors, cheaper low-pressure reactor installations seem possible.

Dr. Malcom McEwen, a research scientist for Monsanto Chemical Company, revealed that the company has compiled the first engineering data to be obtained on the performance of organic coolants in a nuclear reactor core. Results of tests made under contract with the Nuclear Propulsion Division of the Navy's Bureau of Ships show that certain organic substances offer economic advantages as non-corrosive, low-pressure coolants for nuclear reactors. They are subject to some radiation damage, but resulting impurities are easily distilled from the system.

The compounds are also the only coolants other than water known to moderate high-energy neutrons. Water requires expensive corrosion-resistant materials such as stainless steel plus a system which will withstand high pressures. These requirements impose high construction and maintenance costs and are important reasons why nuclear power is much costlier than that produced from conventional fuels.

Of the compounds tested, monoisopropylbiphenyl and biphynl showed the most significant advantages as potential coolant-moderators for reactors. Their low vapor pressure permits functioning efficiently in a low-pressure system.

There was little or no corrosion of the system, suggesting that mild steel could be used in constructing the reactors. The compounds picked up little radioactivity indicating that heavy shielding of external parts of the reactor cooling system against hazardous gamma radiations might be reduced or even eliminated. Radiation damage to the compounds was substantial but the decomposition products were found to be easily separable from the system by simple distillation. They created no problems of heat transfer in the system at concentrations of as much as ten per cent.

Table 1: Growth in World Demand for Fossil Fuels (based millions of tons of equivalent coal per annum)

Year	2% per annum	2½% per annum	3% per annum
1950	2.8	2.8	2.8
1975	4.5	5.1	5.8
2000	7.4	9.5	12.1
2025	12.1	17.5	25.2
2050	19.9	32.5	52.9

Table 2: Electricity Output and Generating Capacity for Great Britain

	1950	1975
Electricity generated (billion, kwh)	55	210
Installed capacity (megowatts)	15	57
Fuel consumed (million tons of equivalent coal)	35	100

Atomic Center

Sylvania Electric Products, Inc., has taken an option on a 150-acre site in the town of Andover, Massachusetts, as the proposed location for a new multi-million-dollar atomic center for the purpose of expanded research, development, and production activities in the atomic energy field. The option was taken pending the formation of the Sylvania-Corning Nuclear Corporation which will be organized as a jointly owned company in the next several months by Sylvania and Corning Glass Works.

The proposed new center will concentrate on the development and production of nuclear fuel elements and components. The facility will consist of five modernistic buildings totaling 150,000 sq ft and arranged in campus-like surroundings. Operations in the new facility will begin early in 1958. Initially, 300 people will be employed at the center, of whom one-third will be engineers and other professional personnel. In five years the total is expected to reach about 800 to 1,000.

W. Benton Harrison, Vice President of Sylvania, stated that conservative estimates indicate that private industry will spend 300 to 500 million dollars in the next four years on commercial atomic energy projects. By 1980, he predicted, the atomic energy industry of the United States will be handling an annual volume of business measured in billions of dollars. He also predicted that the potential annual fuel cycle market in 1980 will be nearly $2,000,000,000 in electric utility generating stations alone, including the United States and foreign countries outside the Iron Curtain.

Nuclear Power Problems

Dr. W. Kenneth Davis, Director of Reactor Development, Atomic Energy Commission, struck hard, recently, at the unsolved problems associated with the application of nuclear energy in a practical and economic manner. Most of the problems facing us are of an economic and engineering nature but unfortunately, until recently, the physicists have dominated the field to a point where the general public is unaware of the valuable contributions made by chemists, engineers and metallurgists. The solution to the real problems remaining with us are

Table 3: Reactors in the South

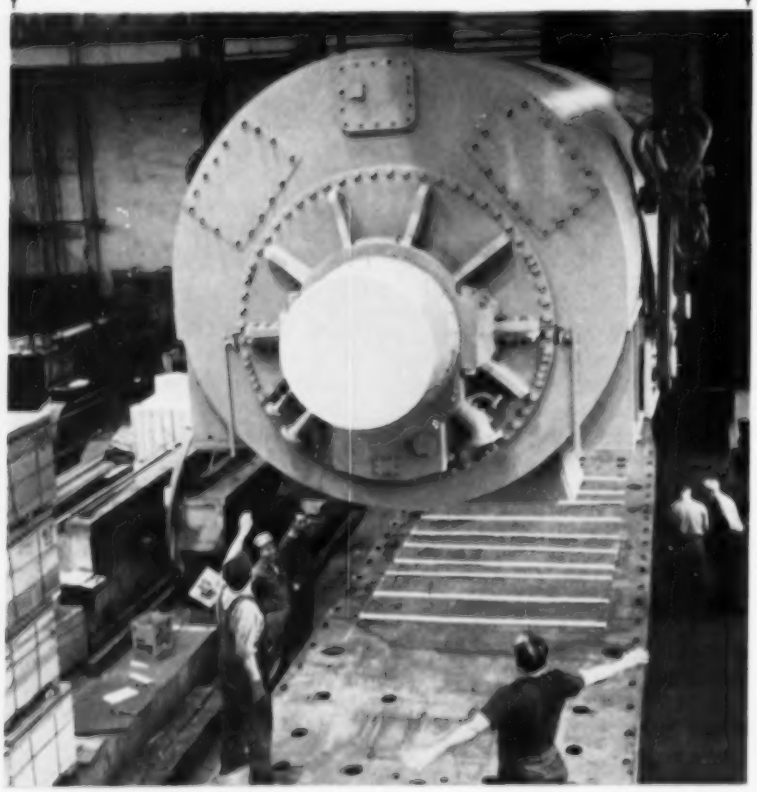
Research Reactors—Location	Start-up Date
Low Intensity Test Reactor (AEC) Oak Ridge, Tennessee	1950
Graphite Reactor (AEC) Oak Ridge, Tennessee	1954
Raleigh Research Reactor (N. C. State College) Raleigh, N. C.	1953
The Prosperity Company Coral Gables, Florida	Planned
Savannah River Test Pile 305 (AEC) Savannah River, S. C.	1953
Process Development Pile (AEC) Savannah River, S. C.	1953
Thermal Test Reactor (AEC) Savannah River, S. C.	1953
Bulk Shield Test Reactor (AEC) Oak Ridge, Tennessee	1950
Tower Shielding Facility (AEC) Oak Ridge, Tennessee	1954
Shield Mockup Reactor (AEC) Oak Ridge, Tennessee	1958
Radiation Effects Reactor (USAF) Fort Worth, Texas	1957
Radiation Effects Reactor (USAF) Georgia	1958
Tower Test Reactor (USAF) Georgia	1958

Critical Experiment Reactors—Location	Start-up Date
ORNL Critical Experiment (Facility-1 AEC) Oak Ridge, Tennessee	1950
ORNL Critical Experiment (Facility-2 AEC) Oak Ridge, Tennessee	1950
Army Package Power Reactor (AEC) Oak Ridge, Tennessee	1956
Critical Facility (Babcock & Wilcox) Lynchburg, Virginia	1956

Power Reactors-Experimental—Location	Start-up Date
Army Package Power Reactor-1 (AEC) Fort Belvoir, Va.	1957
Homogeneous Reactor-2 (AEC) Oak Ridge, Tennessee	1956

Full Scale Power Reactors—Location	Start-up Date
Florida Power, Florida Power & Light, Tampa Electric—Florida	1962
University of Florida (under consideration by AEC)—Gainesville, Florida	1959
City of Orlando, Florida (under consideration by AEC)—Orlando, Florida	1961

Big quantities of commercial power will come from this atomic powered 100,000 kw generator. The reactor for the same plant (Shippingport, Pa.) was made in Chattanooga, Tennessee. It was described in the November issue of SPI.



likely to be found by personnel from the latter group.

Dr. Davis stated that "in the past few years many optimistic estimates have been made about the costs for which nuclear power can be produced in the near future. The tendency has been for these costs to come out just about at a level competitive with conventional power costs in most parts of the country. I believe that there have been valuable by-products from these studies but generally they have indicated what might be done with a successful development program—not what can be done today, or even in the next few years. The publicity given these studies, has however, led the public to believe that these results can be achieved now.

"Many of the predictions and claims have been made by persons without direct experience with the development or construction of nuclear power plants. Believe me, the less you know about it, the easier it looks. It has been interesting to observe how the realities of working on a power reactor project have sobered many of the super-optimists."

Dr. Davis' remarks bring to mind

(*Continued on page* 58)

Eliminate slipping accidents!

Relgrit Abrasive Embedded Grating Treads

Industrial plants throughout the country have found that Relgrit has practically eliminated slipping accidents wherever used.

Relgrit treads are made with an aluminum oxide abrasive, embedded in a "V" groove at the top of the grating bars and nosing. This forms a skid-proof surface that is virtually immune to wear; providing *permanent* protection from slippery surfaces due to water, mud, oil, grease, acids and chemicals. Relgrit is also made for platforms and all other grating areas.

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RELIANCE STEEL PRODUCTS COMPANY

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Offices and Agencies throughout the country

Relgrit Grating Bridge Flooring

Atomic Trends (Cont'd)

an important problem facing the developers of nuclear power plants. This problem has received little or no attention. For instance, the pressurized water reactor power plant at Shippingport delivers steam at a pressure of 600 psi with no superheat and yet the water in the reactor shell is at a pressure of 2200 psi.

Such a low-pressure and low-temperature plant will require considerably more condenser cooling water than a conventional high-pressure and high-temperature plant. There are few parts of the country where very large quantities of condenser cooling water are available and in some instances condenser-water economy is more important than fuel economy. Reactor materials impose low temperature limitations and, as yet, there is no solution to this problem in sight.

An obvious approach would be gas-cooled reactors used in conjunction with gas-turbines. However, gas-cooled reactors have not received anything approaching the attention lavished on the other types of reactors.

The fact that gas temperatures must be kept below a top temperature of 1100 F has caused some pessimism. Nevertheless, Dr. Davis sounded an encouraging note when he stated recently that "the gas-cooled reactor, especially when operated in connection with a closed-cycle gas turbine, appears in some respects to offer possible cost advantages over other types.

"Some of the potential advantages are lightweight, compact arrangement, ease of containment, low corrosion rates and high efficiency. But there are many problems associated with the construction of such a system. Among them are the inherently difficult problems of control and stability, and the fabrication of satisfactory fuel elements.

"At the present stage of gas-turbine development, this reactor type seems to be limited to the lower capacity sizes — up to perhaps 20,000 kw. Our techniques are improving and we feel that in the reasonably near future we may be able to begin construction of a gas-cooled reactor experiment. We are interested in an efficient gas cycle and not in a unit where inefficient, low-temperature operating conditions lead to high operating costs."

Surveying the present development of nuclear power plants one can almost say that they represent a wedding of the reactor the physicists knew the most about (although not necessarily for power purposes) to the type of power plant the utility engineers knew the most about (the steam power plant). It is not unlikely that a more daring outlook may produce a superior power plant better suited to the fact that the reactor and the power plant must work together on a cooperative basis.

Lifesaving Equipment in Kentucky Plant

CRAFTSMEN in Tube Turns' plant at Louisville, Ky., are trained to work safely and are surrounded by devices designed to protect them from hazards. As the result their record for avoiding mishaps is as outstandingly good as their record for producing quality products.

Tube Turns' modern first aid room has the facilities needed to handle many kinds of emergency cases. One of the most interesting pieces of equipment is a compactly built, readily portable Handy Resuscitator, distributed by the National Cylinder Gas Company.

The complete resuscitator-aspirator-inhalator breathes automatically for those whose lungs are not functioning, but it is so light in weight that one first aid attendant can carry it to any part of the plant. Its performance is adjustable to the size of the individual lung and it signals if an obstruction is present. The suction is adequate to remove fluids from the throat and the flow of oxygen or speed of respiration can be regulated instantly at the mask.

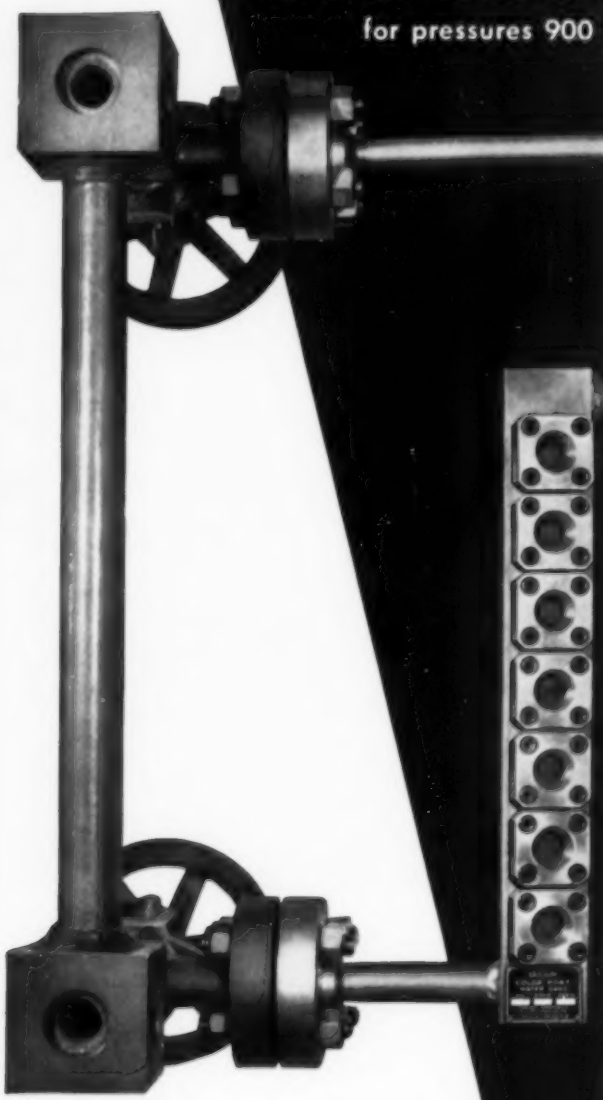
The automatic breathing mechanism may be used at a distance of 200 yards from the carrying case, making it possible to reach and revive accident victims in hard-to-get-to-places, such as tunnels and tanks. In critical emergencies, such as heart attacks, carbon monoxide poisoning, suffocation and shock, the ever ready Handy Resuscitator can avert tragedy.

NEW FROM YARWAY!

COLOR-PORT

BOILER WATER LEVEL GAGE

for pressures 900 to 3000 psi

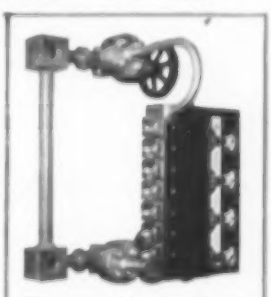


- *two-color readings!*
- *reduced maintenance!*
- *increased availability!*

Now Yarway offers brilliant two-color boiler water level readings, combined with simplicity of gage maintenance and increased availability.

With the new Yarway Color-Port Gage, water space shows green, steam space shows red. A full gage is all green and an empty gage all red.

The Color-Port Gage is *serviced quickly in place* by simple replacement of individual cover-glass assemblies. Each cover assembly is held solidly in place by four socket head capscrews and the "floating assembly" design applies safe predetermined loads on glass ports, reducing thermal shocks, and permitting faster warm-up. *Increased availability means longer service life.*



Side view of Yarway Color-Port Water Level Gage with illuminator, circulating tie-bar and Welbond gage valves.

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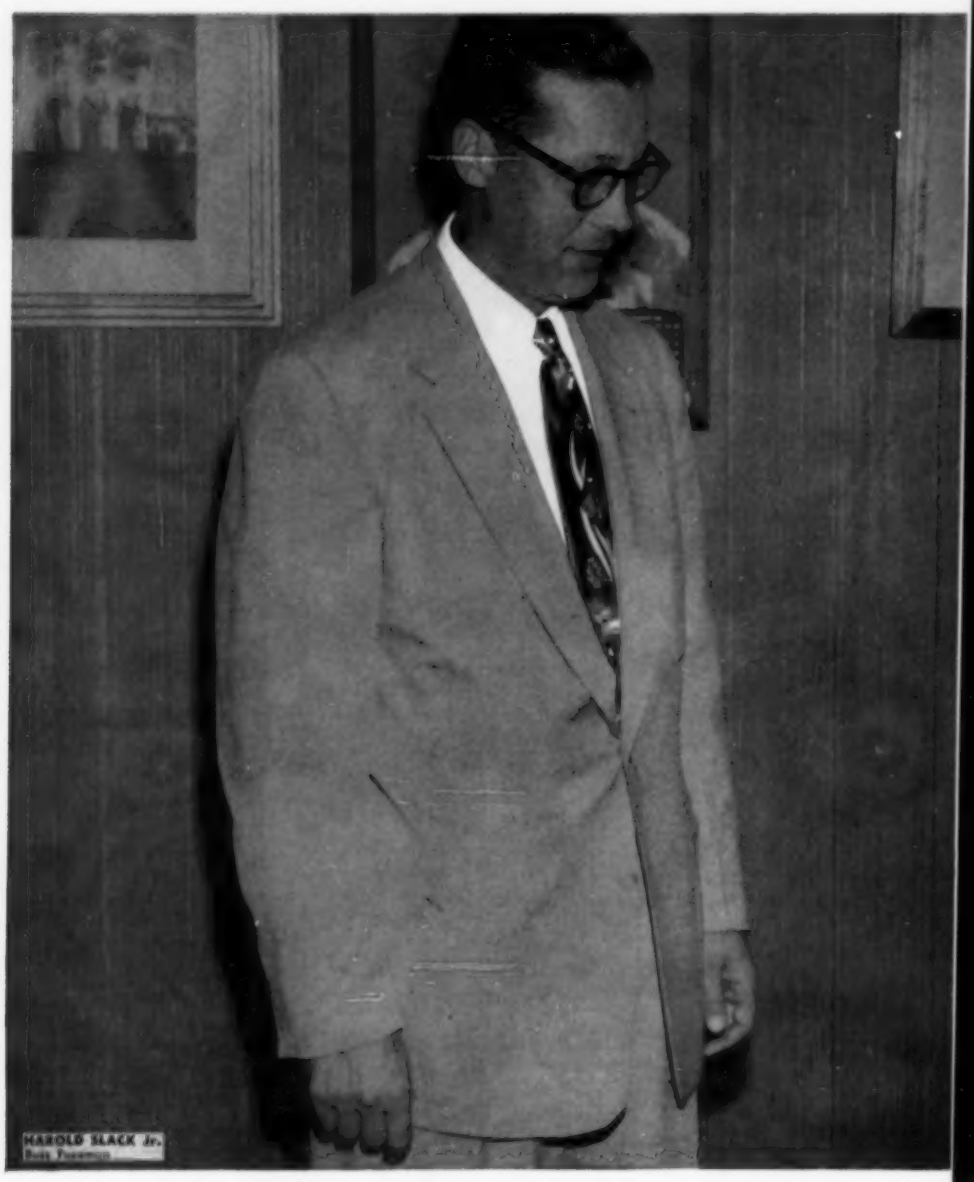

"By installing Fusetron Fuses . . .

We saved from $165 to $225 worth of solenoid coils a year and reduced down-periods"

ED. O'HATNICK, CHIEF ELECTRICIAN
FRANK KNEELAND PLANT, UNITED ENGINEERING & FOUNDRY CO.
PITTSBURGH, PA.

Mr. O'Hatnick continues . . . "The solenoids on the hydraulic clutches of our horizontal boring mills would sometimes stick or slow down when dirt got into the oil.

"When this happened, the tap D. C. solenoid coils wouldn't be pulled in far enough so they would burn up.

"Each coil cost about $15 and with 12 to 18 of them burning up every year it didn't take long for this to add to a considerable amount of money.

"And even more costly were the production losses that resulted from these shutdowns.

"With hope of reducing these expenses, we decided to individually protect the 72 solenoids in use with 3/10 ampere Fusetron dual-element fuses.

"In the next 3 years only 2 coils burned up.

"We had other favorable experiences with Fusetron fuses that convinced me they can make a plant more effective.

"That's why, upon being transferred to our Frank Kneeland Plant, I made a study to see where Fusetron fuses can be applied to help us reduce operating costs."

257

Here's why Fusetron dual-element Fuses protect solenoids, coils and transformers against burnout.

By installing the proper size Fusetron dual-element fuse, a solenoid can be protected. The Fusetron fuse will not open on the operating surge but will open in time to protect, should the heavy current continue too long for any reason.

A transformer or coil, likewise, can be protected because the long time-lag of the Fusetron fuse permits it to hold all normal current surges and harmless overloads—yet it will open to prevent burnout on any dangerous overload.

All you need to protect Coils, Transformers or Solenoids against burnout is a Fusetron fuse plus a fuse block or a BUSS fuse holder.

On voltages up to 125 the same dependable protection can be provided with a proper size Fusetron plug fuse or BUSS Fustat.

FUSETRON FUSES DO MORE THAN PROTECT SOLENOIDS AGAINST BURNOUT . . . ***They Provide 10 Point Protection*** **1.** High interrupting capacity—protect against heaviest short circuits. Have proven on tests to open safely on circuits set to deliver in excess of 100,000 amperes. **2.** Protect against needless blows caused by excessive heating—lesser resistance results in cooler operation. **3.** Protect against needless blows caused by harmless overloads. **4.** Provide thermal protection—for panels and switches against damage from heating due to poor contact. **5.** Protect against waste of space and money—permit use of proper size switches and panels. **6.** Protect motors against burnout from overloads. **7.** Give DOUBLE burnout protection to large motors—without extra cost. **8.** Protect motors against burnout due to single phasing. **9.** Make protection of small motors simple and inexpensive. **10.** Protect coils, transformers and solenoids against burnout.

Write for bulletin FIS.

FOR LOADS ABOVE 600 AND UP TO 5,000 AMPS . . . USE BUSS HI-CAP FUSES! When coordinated with Fusetron fuses they will not open ahead of the fuse nearest fault.

Write for bulletin HCS.

Play Safe! *install FUSETRON dual-element Fuses and BUSS Hi-Cap Fuses throughout entire Electrical System!*

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TRUSTWORTHY NAMES IN ELECTRICAL PROTECTION
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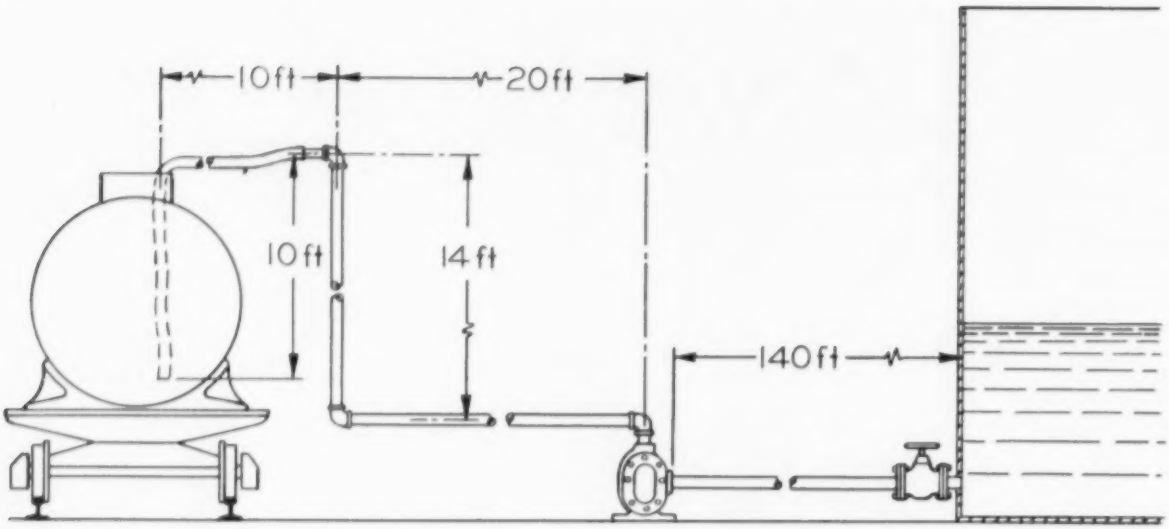


Pumping Problem

Subject: General Transfer — Unloading Tank Car

The Problem—

To unload a tank car of 10,000 gallons capacity in 2½ hours into a 20,000 gallon tank 33 ft high. Liquid to be pumped = #3 fuel oil. Pumping temperature = 30 F to 70 F. Viscosity at 100 F = 45 SSU max. 110 SSU. Specific Gravity = .9 SG.

1. Determine capacity required by dividing gallons by time in minutes. 10,000 gals./2½ hrs. x 60 min. = 66.6 gpm.

2. Determine conditions at pump inlet for 20 ft of 2 in. suction hose and 34 ft of 2 in. pipe.

   a. Dynamic lift (friction loss). Consulting friction loss chart for hose 66.6 gpm will have a loss of approximately 6 psi per 100 ft of hose for a liquid 1 SG thus 6 x .20 x .9 = 1.08 psi friction loss in hose.

      Modulus for 2" pipe is 6.5 for 66.6 gpm at 100 SSU per 100 feet of pipe. 6.5 x .34 x .9 = 1.99 psi friction loss in pipe.
      Total dynamic lift = 3.07 psi.

   b. Static lift for this problem actually has a positive value. The vertical difference in height between the pump and bottom of the car is 4 ft. Therefore, 4 ft x .433 (1 ft water = .433 psi) x .9 SG = 1.55 psi.

   c. Total Inlet conditions

      The dynamic lift 3.07 psi minus the head of 1.55 = 1.5 psi.

3. Determine conditions at pump outlet. Assume the extreme case where the car being unloaded will fill the tank full.

   a. Dynamic lift computed for 140 ft of 2 in. pipe: 6.5 (modulus) x 1.4 x .9 SG = 8.19 psi.

   b. Static lift calculated to top of tank: 33 ft x .433 x .9 = 12.86 psi.

   c. Total Outlet conditions

      Dynamic lift = 8.19 psi
      Static lift = 12.86 psi
      21.05 psi

4. With conditions at the pump established.
   Total inlet 1.50 psi
   Total outlet 21.05 psi
   22.55 psi

   Capacity required 66.6 gpm.

   We look in the manufacturer's catalog for a pump to handle somewhat more than 22.55 psi at a capacity of 66.6 gpm. We find a pump offered for bulk plant work nominally rated 80 gpm at 60 psi running at 560 rpm. In checking the performance data for our problem, we find a rating for this pump 30 psi delivering 88 gpm requiring maximum of 3 hp. This manufacturer has this pump with a built-in gear reduction on the pumping unit, therefore, we can use a standard 1800 rpm 3 hp motor.

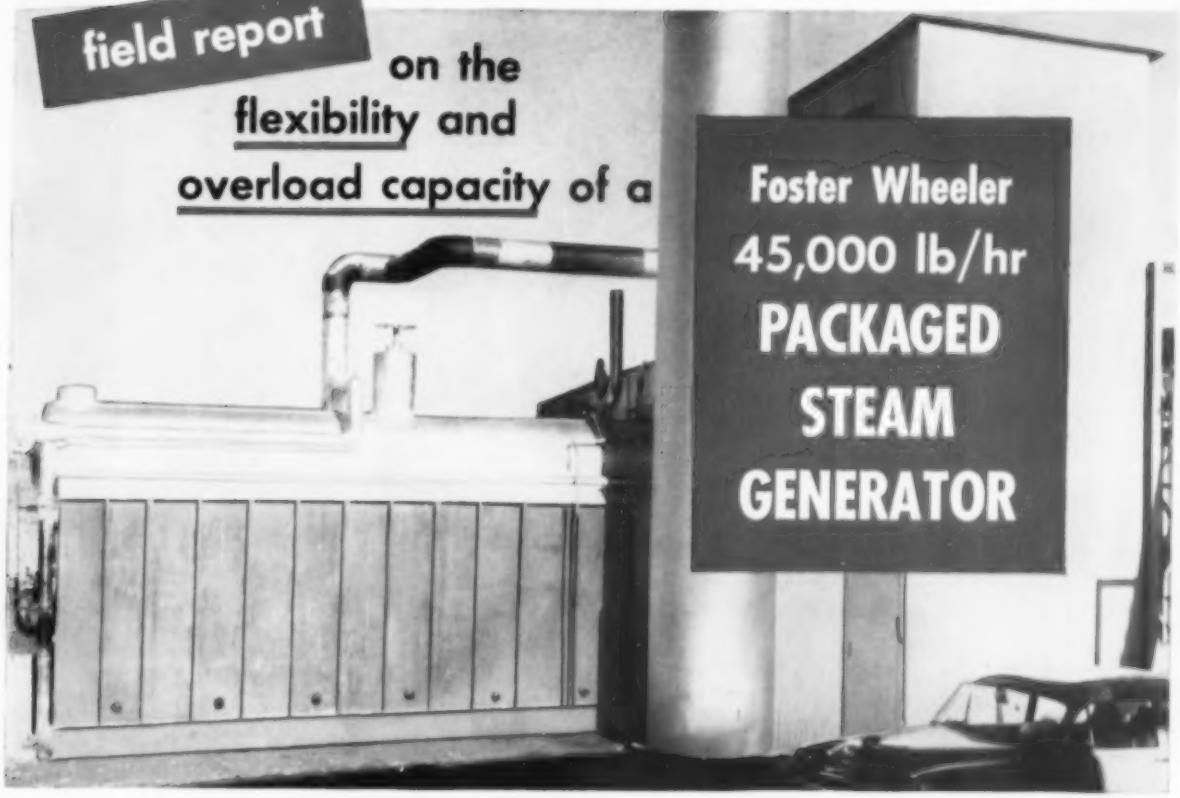
Conclusion—

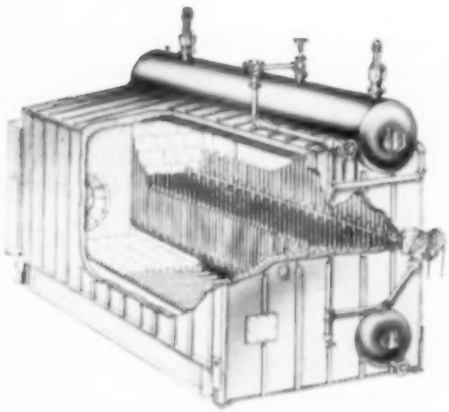
Pump selected nominally rated 80 gpm at 60 psi. Motor required 3 hp 1800 rpm.

Since we have computed the problem for extreme conditions of viscosity and pressure, we are assured satisfactory performance under normal operation.

Adapted from **"How to Solve Pumping Problems"** — a 36 page catalog of the **Geo. D. Roper Corporation.**

field report on the flexibility and overload capacity of a Foster Wheeler 45,000 lb/hr PACKAGED STEAM GENERATOR





Cutaway drawing of FW Packaged Steam Generator of the type shown installed above at a large New England chemical plant. Except for the firing front, the entire unit is located out of doors. The performance tests mentioned here were made in December, under typical New England weather conditions.

FOSTER WHEELER engineers have conducted extensive performance tests on a 45,000 lb/hr oil-fired Packaged Steam Generator installed at a large New England chemical plant.

During a 30-day period, the unit was operated at 42,500 lb/hr on a 24-hour basis, delivering over 1,000,000 lb of steam per day. It was also operated at 46,500 lb/hr over an 8 hr period.

Efficiency at design load of 45,000 lb/hr exceeded contract requirements of 83.2%. During performance tests the boiler was operated in excess of 51,000 lb/hr at an efficiency of 82%.

Although purchased as a base load unit, tests were also conducted to determine its flexibility. Rapid load swings from 10,000 to 51,000 lb/hr were set up while on automatic control. The boiler was able to swing from one extreme to the other in considerably less than 60 seconds.

This very satisfactory performance stems from the conservative FW design and generous water storage capacity which are important features of the entire standard line. Available in rated capacities from 10,000 to 50,000 lb/hr, with wide choice of burners and controls. For complete information, send for Bulletin No. PG-55-3. *Foster Wheeler Corporation, 165 Broadway, New York 6, N.Y.*

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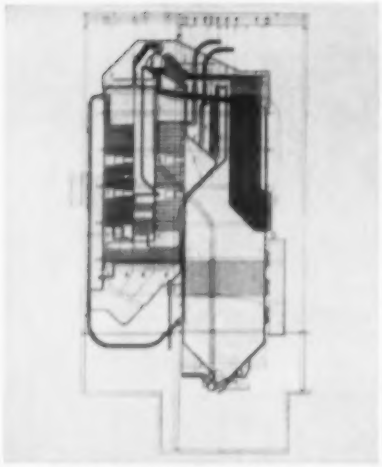
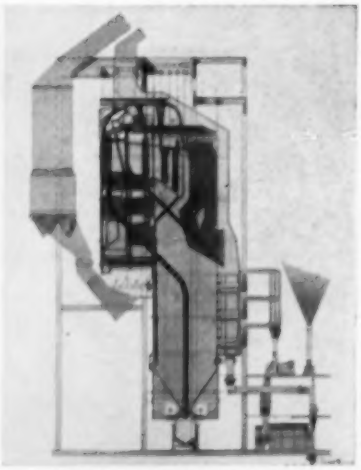


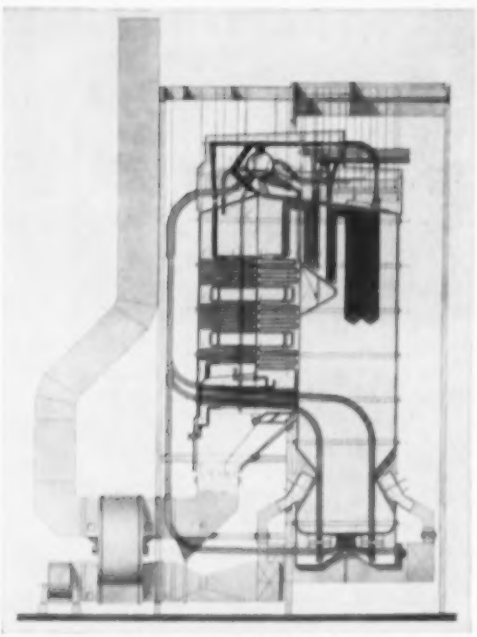
600,000 #, 1700 psi., 1000 F. Reheat



1,000,000 #, 2075 psi., 1005 F. Reheat

COMPARATIVE YEARLY BOILER SALES

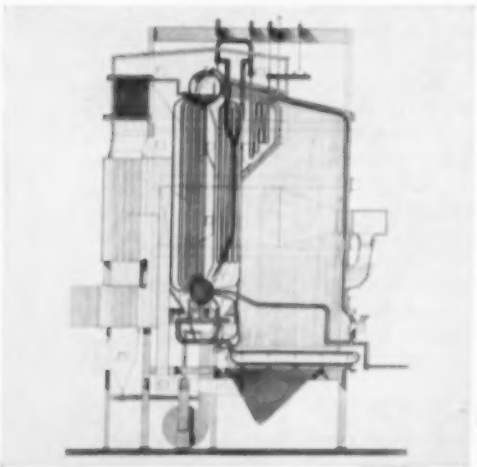
1956 BANNER



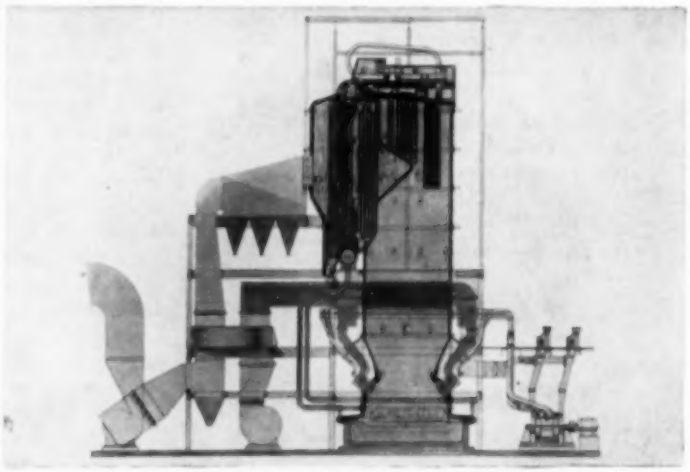
1,550,000 #, 2125 psi., 1005 F. Reheat
TURBO FURNACE

1956 sales of Riley central station and large industrial type boilers were the highest in Riley history. Contributing to this outstanding sales record is the unusual acceptance of the comparatively new Riley TURBO FURNACE, a unique design that provides solutions to a number of problems associated with the economics of fuel utilization.

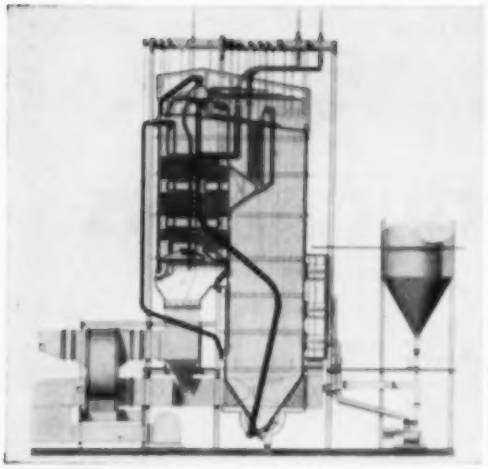
A large percentage of Riley's 1956 sales was to former customers that are completely satisfied with the continuity of operation, high rates of efficiency and dependability of Riley units purchased in the past. One prominent chemical producer ordered ten large boilers from Riley bringing its total number of Riley



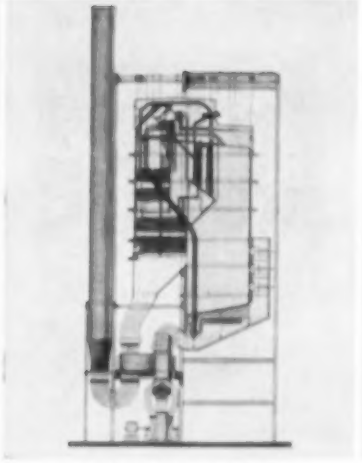
250,000 #, 1825 psi., 905 F.



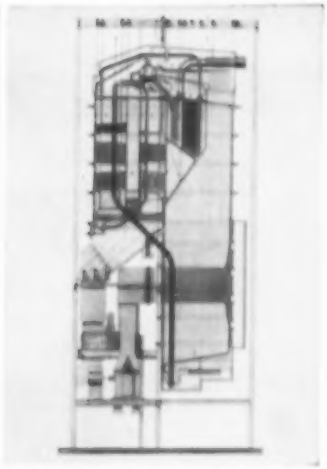
500,000 #, 1425 psi., 950 F.



500,000 #, 1725 psi., 1005 F. Reheat



1,050,000 #, 1725 psi., 1005 F.



1,200,000 #, 2125 psi., 1005 F. Reheat

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units to thirty-six, with a total steam generating capacity of 12,775,000 pounds per hour.

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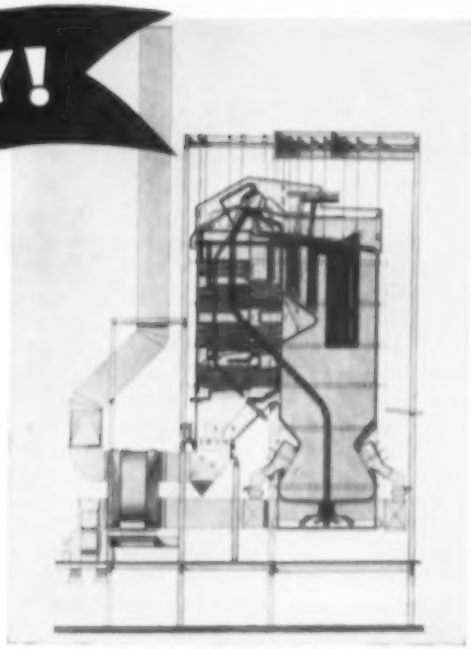
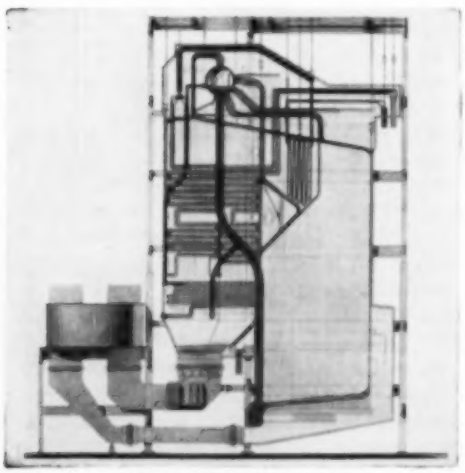
Illustrations depict typical designs of Riley Central Station Units.



825,000 #, 1750 psi., 1005 F. Reheat
TURBO FURNACE



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PART 2* – What the Plant Engineer Needs to Know About Oiling, Cleaning and Overhauling . . .

Maintenance of Electric Motors

By E. P. STAHL
The Garlock Packing Company

*Part 1 of this 2-part article appeared in SPI for February, pages 58-64.

MAINTENANCE problems must be solved if satisfactory bearing life and motor life is to be expected.

Bearing Replacements

It is difficult in some motor bearing applications to determine just how much wear can be tolerated before a bearing should be replaced. There is no hard and fast rule that applies. Each case must be handled on its own merits. However, the safe move is to replace a bearing if it has already given expected service rather than face a major repair job.

Certainly if after washing out all the old lubricant, roughness is noted when the outer race is rotated slowly, the bearing should be discarded. It is always poor practice to cause a bearing to spin by directing a jet of air at the retainer. A questionable or badly worn bearing left in service creates the possibility that you may have to tear the motor down again and remove the bearing at a time when the motor is most needed. That is costly, not only in labor costs but in down time.

In Part I, we discussed the fitting and holding inner rings or races of bearings to motor shafts. The same rules apply to the outer race and housing except the situation is not quite as critical. One reason for this is the large surface of the outside diameter of the bearing outer race in relation to the area of contact of the inner race or ring.

Many bearing manufacturers and many bearing users believe the outer race should creep in the bearing housing to distribute wear. There are arguments pro and con regarding this, and up to now the consensus has been in favor of some creep. However, any bearing user must be aware of the dangers of too loose a housing seat, a condition that must be corrected if a full measure of service is to be secured from the bearings. Turned bearing housings are to be avoided if optimum service is to be secured from the bearings. Unless the bearing seat is ground smooth the job will not last.

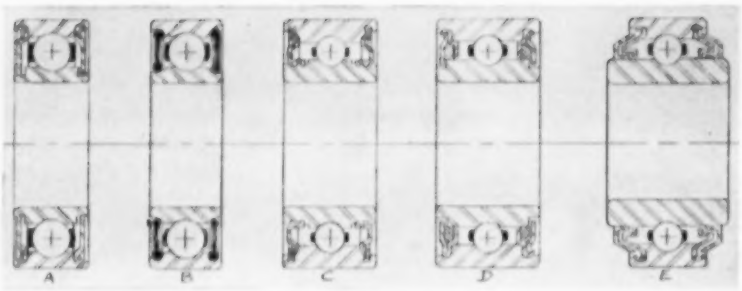

Fig. 10

Lubrication Procedures

Small electric motors with sleeve type bearings are common in every plant, but many craftsmen neglect their lubrication. Some motors are built with self-sealed grease packed ball bearings as shown in Fig. 10, but most motors have either oil cup or ball joint oil points, usually located on the case housing right above the shaft.

Use of a drop or two of S.A.E. No. 10 or No. 20 oil every three months will suffice to lubricate the bearings. Light household oil of the multi-purpose type is not recommended because it dries quickly and may wash away the heavier oil in the bearing. Without protection the motor could burn out after a few hours of running. Be sure the motor is disconnected when oiling.

Sealed ball bearings were discussed and illustrated in Part I. Sometime ago these bearings were called "sealed-for-life" bearings. This was a true statement but it was not said whether it was the life of the machine, the lubricant, or the bearing. As previously stated, it is generally common practice to use the lightest lubricant that can be contained in the particular housing or bearings. This usually means grease for self-sealed ball bearings and grease or oil for externally-sealed ball or roller bearings. In electric motors, grease is nearly always indicated unless unit or lip type contact seals are used as shown in Fig. 11 when liquid grease or oil may be used.

In actual practice a ball or roller bearing in electric motors needs a surprisingly small amount of lubricant whether oil or grease is used. However, it is important that an oil or grease of a high quality be selected.

Lubrication is one of the most important items of motor maintenance. The lubricant in most motor bearings should be replenished at regular intervals. The frequency of relubrication depends on the type and size of motor and the operat-

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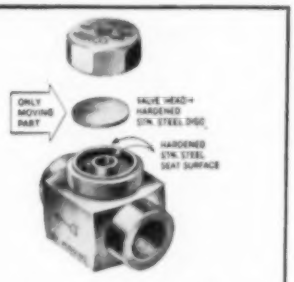

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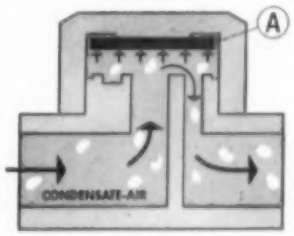
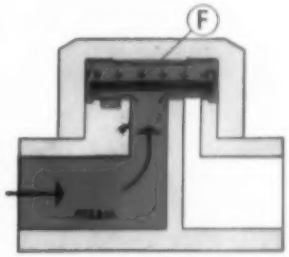
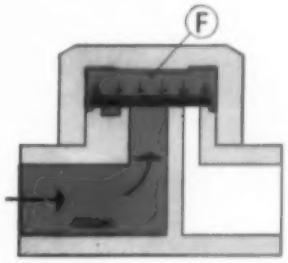


1. Inlet pressure raises disc "A" from seat... immediate discharge of air and condensate at steam temperature



2. Steam follows the condensate and the high velocity jet across the bottom of disc "A" creates a low pressure area (Bernoulli effect)... the jet is deflected into chamber "F" where it builds up pressure by recompression and this pressure acts on the top of the disc "A"...



3. Pressure in chamber "F", acting on full top area of disc "A", exceeds force of incoming steam and low pressure area under the disc... and immediately forces it down, closing the inlet. As condensation decreases the pressure in chamber "F", the disc rises and steps 1 or 2 repeat.

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ing conditions. Frequency of lubrication can only be determined by regular inspection.

When the schedule is determined it is advisable to adopt some form of identification system. One method consists in attaching a metal tag to each lubrication fitting or a decalcomania to the housing as shown in Fig. 12 carrying a code of numerals. The first numeral indicates the number of strokes of the grease gun to supply the correct amount of lubricant. The second numeral of the tag or "decal" indicates the identification number of lubricant to be employed, and the third numeral shows the frequency of lubrication: 1 indicates yearly, 2 indicates semi-annually, 4 quarterly and 12 monthly.

Following this system the maintenance or shop men eliminate the element of guess from their lubrication program. They are informed at a glance which bearings require lubrication and how much of what lubricant is to be applied. This system saves time and work and eliminates the necessity of consulting records for each motor.

Lack of proper oiling or greasing is disastrous to motors, but too much oil or grease is bad if not worse than too little. Excess lubricant gets in the windings and deteriorates the insulation of the motor. Too much oil also causes dust or lint to stick inside the motor so that it is practically impossible to blow it out with air. Over lubrication also results in power losses, overheating by internal friction, excessive wear of bearings and wasting of lubricant.

When a pressure grease gun is used it is customary for the maintenance or shop men to "give'er the gun" and trust to luck. The result is usually a "packed" bearing.

These hazards can be eliminated or at least mitigated by the use of pressure relief fittings as shown in Fig. 11. These fittings apply the proper amount of grease to the bearing, indicate when the proper amount has been applied and prevent "packing" the grease in the bearing. They also show whether the grease gun is working properly because if the grease is not extruded at the escape ports of the fitting, it indicates an air pocket in the gun. With these relief fittings it is impossible to overlubricate the bearings under any circumstances.

The kind of oil or grease used is equally as important as a definite lubrication schedule. Generally a motor user can follow the recommendations of the motor manufacturer or experienced oil companies or their representatives.

When unusual conditions exist, oil company engineers should be called in to help the motor user make a study of special problems.

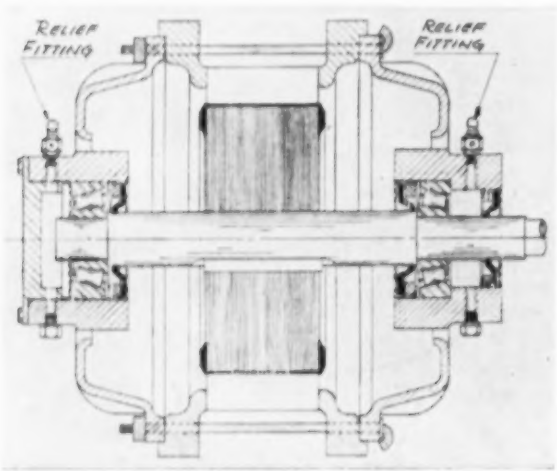

Fig. 11

Motor Cleaning

Cleaning is among the items of first importance in motor maintenance. Lint, dirt and dust burn up motors. To get the best results from cleaning, a definite schedule must be established and followed. There are two ways to handle the job:

1. Have the electrical department supervisors direct all cleaning.

2. Have the cleaning done by regular plant cleaners.

If the cleaning program is not under the supervision of the electrical department, electricians should continually make spot checks. It is imperative to keep the motors clean at all times.

The insulation in an electric motor cooks rapidly when the air passages get clogged with lint or dirt and proper cooling is cut off. This is particularly true when a motor is running 24 hours a day under full load.

A desirable way to clean a motor is to direct dry compressed air into it at pressures no higher than 50 psi.

Overhauling

Worn motors sometimes quit on the job, but correct overhauling methods instituted at regular intervals bring them back to life. One of the parts of a motor that frequently fails is the motor winding. This is often the result of the rotor rubbing the lamination of the stator, caused by worn bearings. This condition causes a burned out motor even though the motor may have proper controls for protection.

To properly overhaul a motor it should be taken outside the shop and blown off with compressed air as previously discussed under "Cleaning." Then the motor should be taken into the shop, disassembled and the parts cleaned. If the stator is oily, it should be cleaned with steam and a detergent solution, then cleaned with steam until the solution is removed.

After the stator is cleaned it should be put into an oven to dry. When it is thoroughly dry it should be taken from the oven and let cool to within 25 degrees F of room temperature, after which it should be dipped in a container of varnish and let stay until the varnish has stopped bubbling.

All excess varnish should then

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POWER PIPING—THE VITAL LINK

Maintenance of Electric Motors (Continued)

be drained from the stator after which it should be put back in the oven. If common insulating varnish is used, the stator should be baked for 8 to 10 hours at 235 to 250 F.

The stator should then be removed from the oven and the varnish cleaned from the metal surfaces while they are still hot. The varnish is removed easily if the metal is not allowed to cool and set the varnish up hard.

Bearing failures in motors in textile mills mounted on or near the floor are often caused by yarn falling to the floor and being sucked into the end of the motor and then winding on the shaft causing overheating — then the grease in the bearing breaks down. Often the waste yarn in motors in textile mills actually works under the grease seal and locks the balls in the bearing. Immediate failure follows. This condition can be mitigated by covering the bearings with a ¼ inch screen.

Close supervision in cleaning motors is needed to prevent cleaners from blowing off the outside and leaving the inside full of lint and dirt. This is where the damage is done.

When an electric motor is overhauled the rotor should be checked with a growler to determine if any of the bars are open. Any open bars should be corrected, if possible. To correct this condition braze the bar ends to the ring, or drill a hole and use a wedge to expand the bar tightly in the ring.

If the rotors have the bars in the shorting ring in one casting, the rotor has to be replaced.

All bearings should be checked for wear and the worn ones replaced.

To do a thorough job of overhauling, the rotor shaft should be checked for wear and alignment. A slightly bent shaft can cause trouble. Noise usually indicates rough balls or rollers or a rough inner bearing race. As stated previously all bad bearings should be replaced to avoid a major repair bill.

Ball or roller bearing motor shafts should not be worn more than 0.0005 in. under the inner ring or race measurements of the bearing. A practical test of shaft wear is: If the bearing will slip on the shaft without being heated slightly, it is too loose. In this case the shaft should be built up by chromium plating or metalizing and ground to size. However, if the bearing has to be heated very hot to install it on the shaft, it is too tight, which is bad. If an inner ring or race is put on a shaft too tight it will either be distorted or expanded. Either condition causes pre-loading which results in heating and reduced bearing life.

Since motor bearings have a revolving inner ring or race the outer ring or race should have a housing bore 0.0005 in. larger than the outer race to allow creep in the housing.

fits too tightly in the housing it may not adjust itself to its proper running position as the shaft expands due to an increase in temperature.

Sometimes ball and roller bearings show markings due to passage of electric current. Depending upon the film strength of the lubricant, the harm resulting from electric current may have little or no effect. However, instances are found where current is strong enough to melt the material at the point of contact.

Many such markings require high magnification for actual study and thus may easily evade visual examination of a noisy bearing. However, any crater or burn developing as a result of such current passage may eventually produce a fluted condition — a sort of a washboard appearance on the bearing ring surfaces — and this in turn will effect performance and life of the bearing.

Today, machine designers and

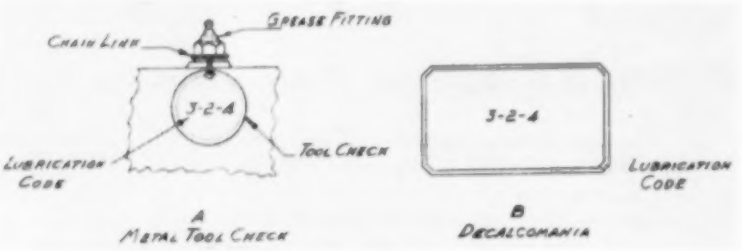

Fig. 12

Creep has been previously mentioned. Shop men and mechanics object to this creep size because it usually results in wear in the cast iron housing until the bearing gets loose and begins to chatter. However, best opinion is in favor of it. When chattering starts, the housing wears excessively, particularly if the rotor is not well balanced.

Rather than replace the entire housing bracket it can be bored and bushed at less expense than a new one. Best results are obtained if the bearings are fitted without excessive looseness in the housing. Then the bearings do not become loose and wear the bushings or housing. However, if the bearing

bearing users have largely circumvented this trouble by the use of suitable current diverters but as a cause of bearing trouble it remains worthy of consideration, especially where the first analysis reveals no definite source of failure.

Electric motors may be flooded by water as was the case with the flood in New England in 1955. Water may also be introduced with the lubricant. In cases of this kind corrosion pitting of the bearings will occur and is distinguished by a dark brown color. This pitting will cause the bearings to be noisy and since the machine has just been put into service the motor user will blame the bearing.

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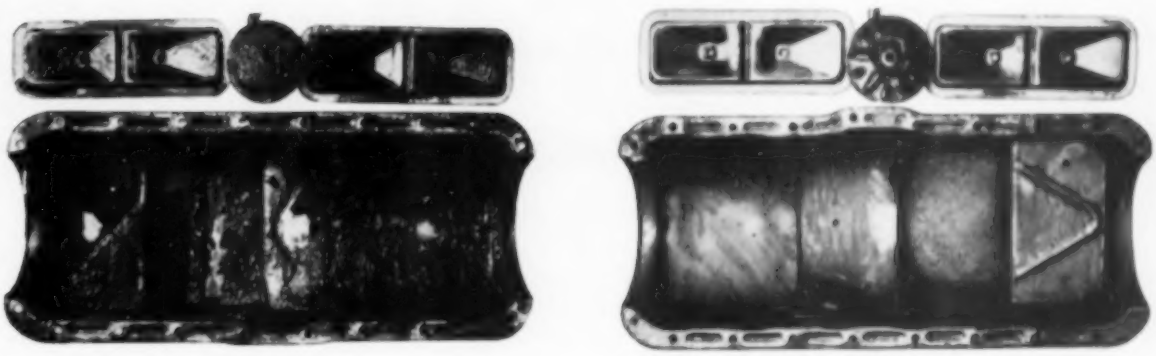

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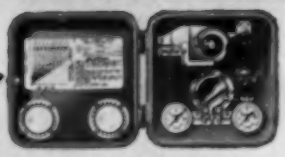
The Answer to Your Liquid Level Needs

TYPE 259B—Level-Trol cage unit with 2" 600 lb. flanged top and bottom equalizing connections (F-1).



TYPE 2500—proportional pilot for general liquid level control applications.

TYPE 2500T — Level-Trol pilot used as pneumatic level transmitter.

TYPE 2500C—pilot with level indicator. Indicator available on all style Level-Trol pilots.

TYPE 2500 — 2516 dual Level-Trol pilot consisting of Type 2500 for remote level-indication or recording and Type 2516 controller with proportional and reset response.

The wide variety of pilots available for mounting on the Level-Trol gives further evidence of the Level-Trol's ability to handle practically any liquid level, interface level, or specific gravity control or indication problem.

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MARSHALLTOWN, IOWA • WOODSTOCK, ONTARIO

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FISHER Since 1880

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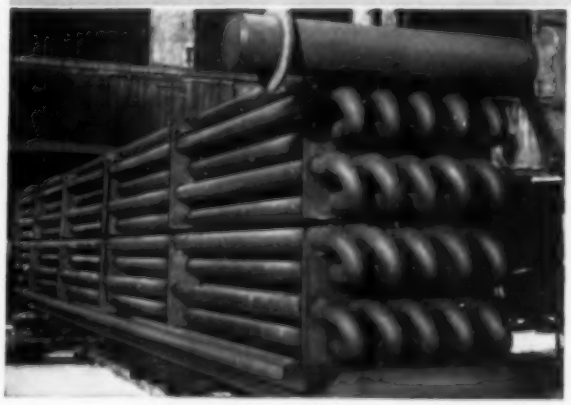

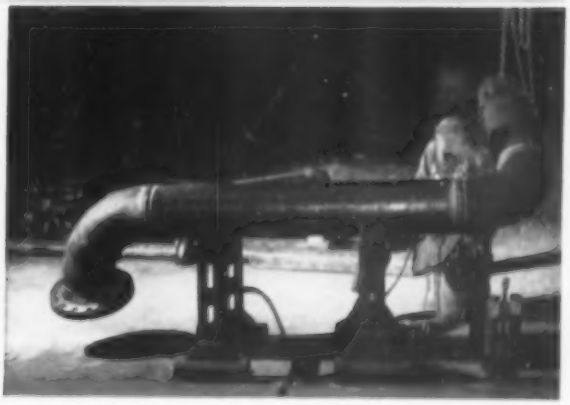

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QUALITY — Delivery of prefabricated piping subassemblies to exacting engineering standards which meet all governing code requirements is assured by Grinnell's Quality Control, which includes:

Interpretative engineering; metallurgical research; specialized facilities; skilled personnel; rigid inspection.

ECONOMY of specifying Grinnell prefabricated piping results from:

One source for design, interpretation, and fabrication; coordination of shop production under ideal conditions; elimination of waste by paying only for finished material delivered; reduction in field erection time.

INCLUDED IN PRICE (which is determined in advance) are such items as: interpretation of fabrication needs, shop sketches and planning, procurement of materials, power services, expendable tools and supplies. There are no charges for spoilage. All prefabricated piping is rigidly inspected and tested to comply exactly with customer specifications.

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A North Carolina Personnel Manager Discusses the Supervisor's Responsibility for Keeping Men on Their Jobs

Lance, Inc.
Charlotte, N. C.

ABSENTEEISM

By A. L. BECHTOLD, Personnel Director
Lance Incorporated, Charlotte, North Carolina

RESPONSIBILITY for absenteeism is an important element in the industrial plant supervisor's job. So often the supervisor considers only the fact that his company wants to eliminate absenteeism to get out more production. This, of course, is very true and yet there are some other basic fundamentals which the supervisor must not overlook, and which are quite important as far as the over-all functioning of his specific department is concerned.

One of the fundamental reasons for the elimination of unnecessary absenteeism in a particular area of operation is that it gives the impression to the employees of "a laxness or inefficiency in management." This can be interpreted in many ways.

Often a supervisor, through no particular fault of his own, has the impression that his plant superintendent isn't too interested in who stays out and who reports for work just as long as that department functions satisfactorily and produces the number of items specifically assigned to it.

Fishing Is Contagious

The average worker in an organization is just as much a creature of habit as anyone else. If he feels that his supervisor isn't particularly interested in whether he reports to work or goes fishing, he will have that same feeling when he is on the job, and naturally poor workmanship and low quality will result.

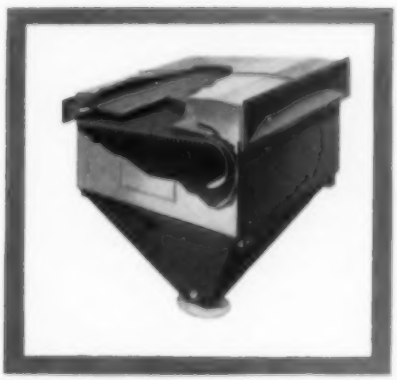
A supervisor who has a definite goal as far as his production is concerned should also have a goal in regard to elimination of unnecessary absenteeism. He should not in any way give the impression either to his workers or others in another area that he doesn't care if Joe stays out once in a while, since Joe is a good worker, and his department is running ahead of schedule.

Little does he realize that frequently Joe will mention his fishing trip to Bill, who works in another department. Then perhaps Bill will stay out from work and if Bill's supervisor happens to be on the ball, he will call him on the carpet. If that happens it automatically affects a number of individuals in Bill's department who find it hard to understand why Bill could not stay out from work without being reprimanded while Joe in another department could get by with it.

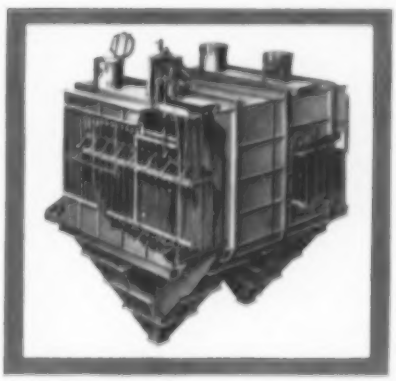
(Continued on Page 76)

How Buell's Shave-off tips the scales for Extra Dust Collection Efficiency

Side entry of dust-laden gases through Buell-designed manifolds minimizes turbulence, raises efficiency even higher in Buell cyclones. Large-diameter design eliminates clogging and bridging. Heavy plate construction assures years and years of extra service life without repair or replacement.



Buell's Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for either natural or mechanical draft installations. Ideal for boilers from 100 to 2000 BHP.



SF Electric Precipitator, a Buell exclusive, also delivers *extra efficiency* due to unique Spiralectrodes and Continuous Cycle Rapping of collecting electrodes.

For more specific data about Buell's *extra efficiency*, write Dept. D-80, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

buell®

MECHANICAL ELECTRICAL

Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**

Continued from Page 74

FRINGE BENEFITS are just as much a part of the plant's FIXED CHARGES as capital cost and taxes. Absenteeism is expensive, even if the machines keep running.

Another factor which enters into this problem of absenteeism is the over-all philosophy of the particular company in respect to absenteeism. When we say the over-all philosophy we are thinking more in the area of whether the individual supervisor realizes why the company wants a good absentee record or whether he feels that absenteeism is one of the necessary evils which he must tolerate regardless of what the conditions might be.

The supervisor might also feel that times have changed and people do as they want to do. The supervisor must realize that this philosophy cannot prove satisfactory because his production schedules must be met and quality kept at a high level. This can only be accomplished by people who are *on the job*.

Let's look at another area. Suppose your organization had approximately 1,000 people employed and you had a daily average of 5% absenteeism throughout the organization. That means that you would have fifty people out. You, as a supervisor, might say, "Well, 5% of my work force is a very negligible number. I can always make adjustments and change operators to overcome that."

Of course, in some areas and for some organizations 5% may be a rather low figure, but let's look and see what 5% can mean in the area of fringe benefits alone. Let's suppose that your company is paying fringe benefits on each employee at the rate of about thirty-five cents per hour per employee. If you have fifty people out each day for an eight-hour day, your fringe benefits in the course of a year's time will amount to $7,000. That's a lot of money for any organization to lose.

The fringe benefits figure is only a very small portion of the over-all loss which the company has. The loss of the services and the production of each individual will probably exceed many times the fringe benefits cost and can even enter substantially into the profit picture of the company.

Naturally if 5% of the people stay out, the company's production will presumably be cut approximately 5%. That 5% cut in production can mean the difference probably of producing a product at a profit or at a loss because of the overhead. If less is produced, naturally the over-all cost per unit will be that much greater. Where the fringe benefits vary up to fifty, seventy-five cents, or even more per individual per man-hour, you can readily see what might happen to this $7,000 figure at thirty-five cents.

Cause and Cure

Now what's the solution? Some individuals say that because of our economy, people are earning more money than they can use, at least on a theoretical basis, and therefore, instead of working five days, eight hours per day, they are content with working four days and eight hours and taking off the other time to do the things they like to do.

Other individuals might attribute the cause of absenteeism to the fact that in many families more than one member of the family is working, thus making the income high per family. Some of you will recall that during World War II when production was so necessary for the boys on the far-flung fronts, an extensive flag-waving campaign was launched by our government and local communities, and absenteeism in most war plants was cut to practically nothing. What had happened?

Individual pride had been touched by the flag-waving—the loyalty of the person to his country was stimulated, creating a desire to accomplish his work to the best of his ability for the benefit of the boys who were on the many fronts. Now probably each supervisor cannot do all the "flag-waving" that is necessary in his particular area of operation, to stimulate the desire in each worker in his department to be on the job regularly, but you, the supervisor, are nevertheless, the key

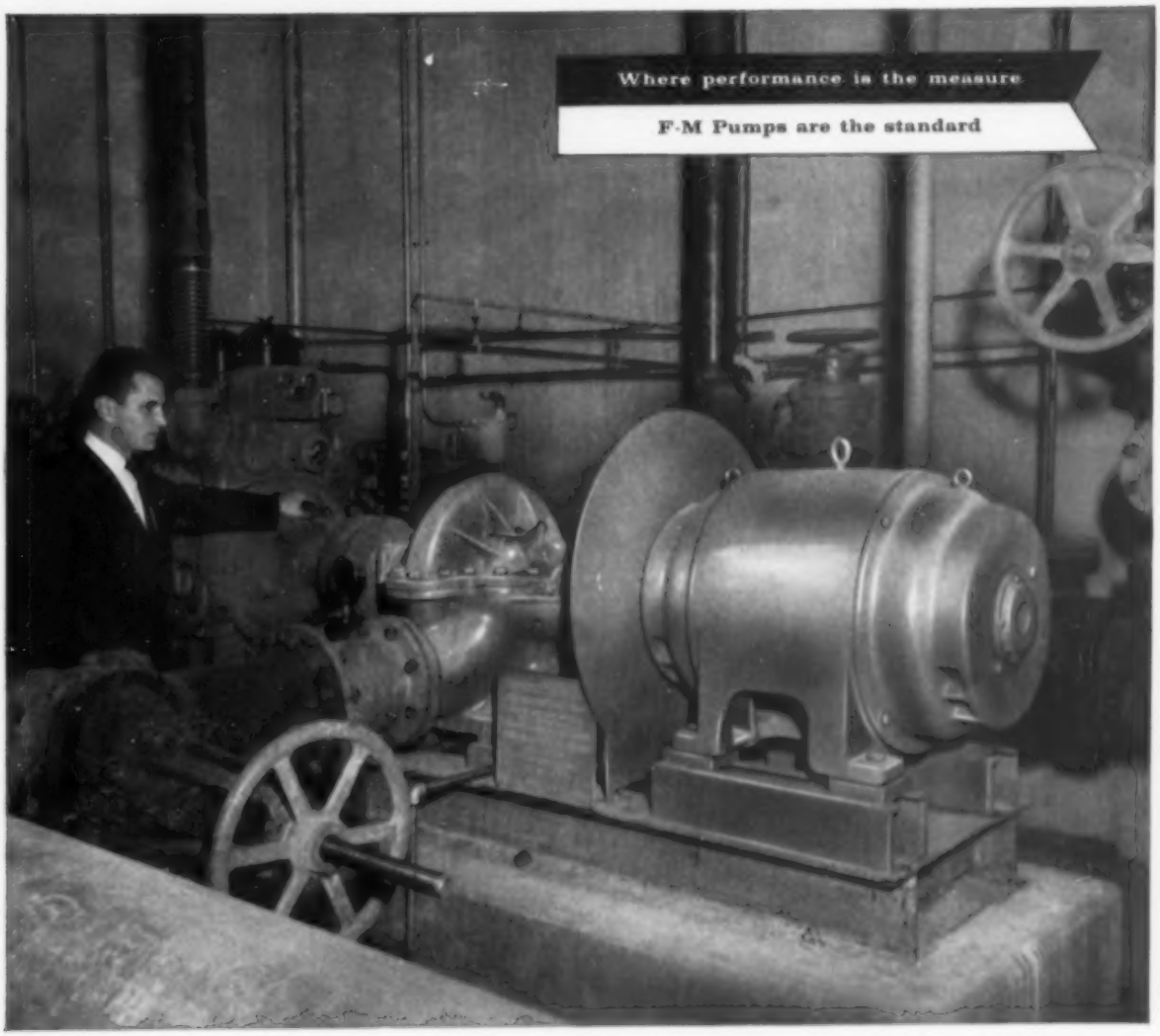
How well do you know each individual worker — his peculiarities, his habits, his demands for recreation, his outside obligations, etc.? "Oh," you might say, "I know how many children he has, what his wife's name is, that he drives a certain make of car." Well, I believe that there is something more fundamental that the supervisor can do to get "close" to the worker — to make him realize that it is only through teamwork — efficient teamwork — that the company can continue to do the things which they have been doing in the form of fringe benefits or wage increases and, ultimately, the providing of a job.

If the supervisor can make an employee see the over-all picture and the importance of his being at work regularly by discussing some of the fundamental factors which make business click, he can build up that individual's pride so as to encourage better attendance.

If the supervisor doesn't handle his management job correctly, efficiently, and effectively, sooner or later changes will have to be made, either in supervision or in the operational setup.

Yes! the supervisor is the important key in the area of absenteeism. The 5% may seem to be a very small figure for you and your department, but add it up . . . add up the cost of fringe benefits, add up the loss of production and efficiency, and also add up the effect it might have on other workers, and sooner or later the wheat will be separated from the chaff as far as good or mediocre supervisors are concerned.

Yes! it is your responsibility as a supervisor to cut absenteeism.



Fairbanks-Morse 6" dual driven fire pump in jet engine testing laboratory.

Standby against 3500 degrees!

Full power testing of Navy jet engines creates exhaust heat up to 3500° F. a few feet from highly inflammable fuel—a constant fire hazard when in the confines of the testing laboratory.

To insure positive protection against fire losses, Thompson Products Gas Turbine Laboratory, Perry, Ohio, has installed a sprinkling system with a Fairbanks-Morse 6" dual-driven fire pump—capable of pumping 1500 gallons per minute. The installation is so dependable, so positive that prompt approval was given by the authorities having jurisdiction.

Don't gamble with the heart of your fire-prevention equipment; insist on F-M pumps with F-M power. See your F-M Field Engineer for expert assistance, or write Fairbanks, Morse & Co., Department SPI-4, 600 South Michigan Avenue, Chicago 5, Illinois.

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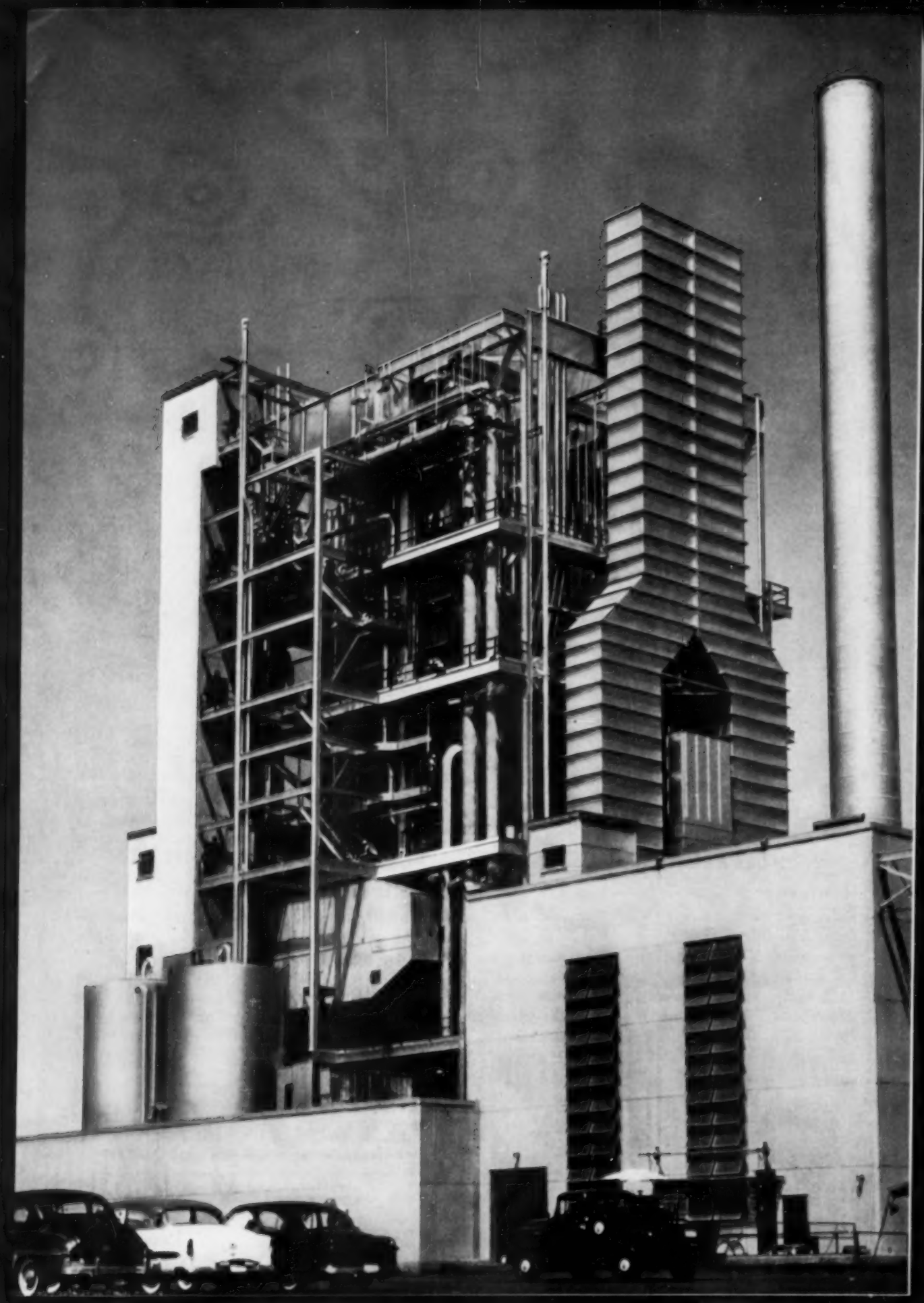


Advanced B&W Engineering in New Radiant Reheat Boiler Helps Produce

More Low Cost Power for Oklahoma

A B&W Radiant Reheat Boiler, burning natural gas, has gone on the line at the Riverbank Station of Oklahoma Gas & Electric Company at Muskogee. It is equipped with fifteen of the largest gas spud burners ever manufactured by B&W, and is designed for future conversion to coal-burning.

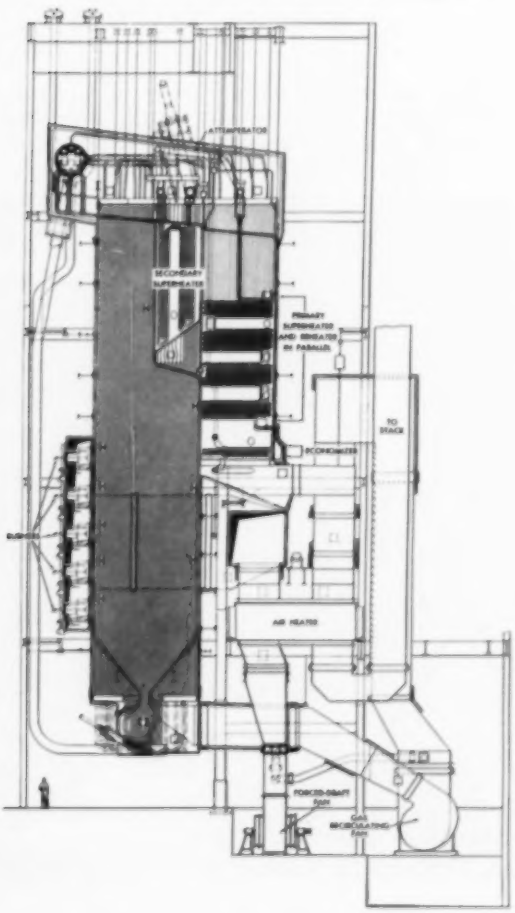
Among Design Features assuring increased station generating efficiency with this boiler is the recirculation of gas for steam temperature control. The gas is introduced without interference with the combustion process. Recirculation of a portion of the flue gas in a boiler makes it possible to obtain the desired steam temperature at specified fractions of full load—an important requirement for top turbine performance.

Natural Circulation is made possible by B&W Cyclone Steam Separators. This brings about really important savings in operating and maintenance costs. B&W's steam separating system insures high purity steam for the turbine and keeps the turbine on the line for longer periods between cleanings. Higher turbine efficiency is consistently maintained.

These B&W engineering advances, plus proved high availability, are major reasons why Oklahoma Gas & Electric has on order two more units similar to the new Riverbank boiler. Other B&W Boilers already are at Mustang Station, Oklahoma City; Horse Shoe Lake Station, Harrah, and Arbuckle Station, Sulphur.

Important to Oklahoma Gas & Electric and its engineers, in selecting B&W Boilers, was the friendly service and excellent engineering so close at hand from the nearby link in a national chain of plants and engineers. Progressive electric companies and their consulting engineers know that nearly a century of steam generating experience supports B&W research, development, engineering, and design. This pool of knowledge is available to you, to help you meet your central station requirements. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, New York.

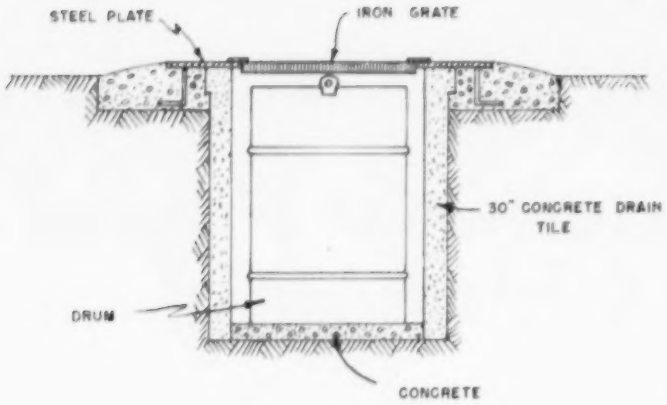
G-838-C8



BABCOCK & WILCOX

BOILER DIVISION

B&W Radiant Reheat Boiler at Oklahoma Gas & Electric Company's Riverbank Station. Steam capacity is 1,200,000 lbs per hr. Boiler design pressure is 2150 psi. Steam pressure is 1935 psi at superheater outlet and temperature is 1005F with reheat to 1005F. Sargent & Lundy, Chicago, Consulting Engineers.



Crank Case Drain Pit

THE ILLUSTRATED drain pit has provided a convenient place to drain oil from engines and has promoted better housekeeping around the maintenance building.

The pit will accommodate a 55-gallon drum. When the drum becomes filled with oil it is simply removed and emptied. Previously, the oil was drained into small containers or permitted to drain on the ground.

By EDWIN G. HART, Gas Plant Repairman, Katy Gas Cycling Plant, Humble Oil & Refining Co., Katy, Texas.

Glass Brick Walls Stop Condensation

REPLACEMENT of moisture-rotted wood sash and their conventional flat glass window lights with glass blocks solved a troublesome and damaging condensation and window maintenance problem at the Poinsett textile plant of Abney Mills at Greenville, S. C.

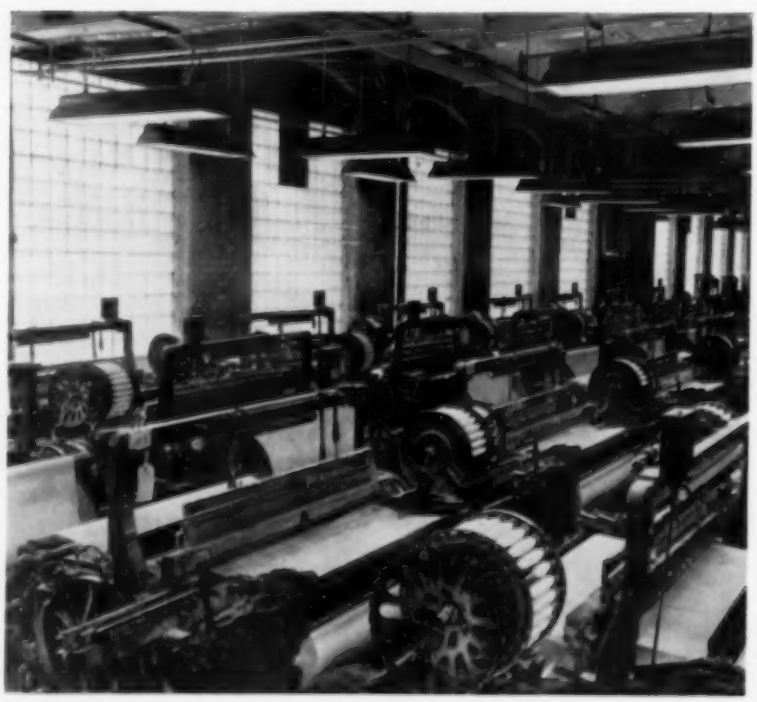
Mortared into place to become an integral part of the mill wall, the glass blocks offered an insulating value almost equivalent to that of the wall itself. As a result, moisture which had previously formed on the flat glass windows and rotted the sash, has been practically eliminated. Light directing blocks, produced by Pittsburgh Corning Corporation were used in the installation.

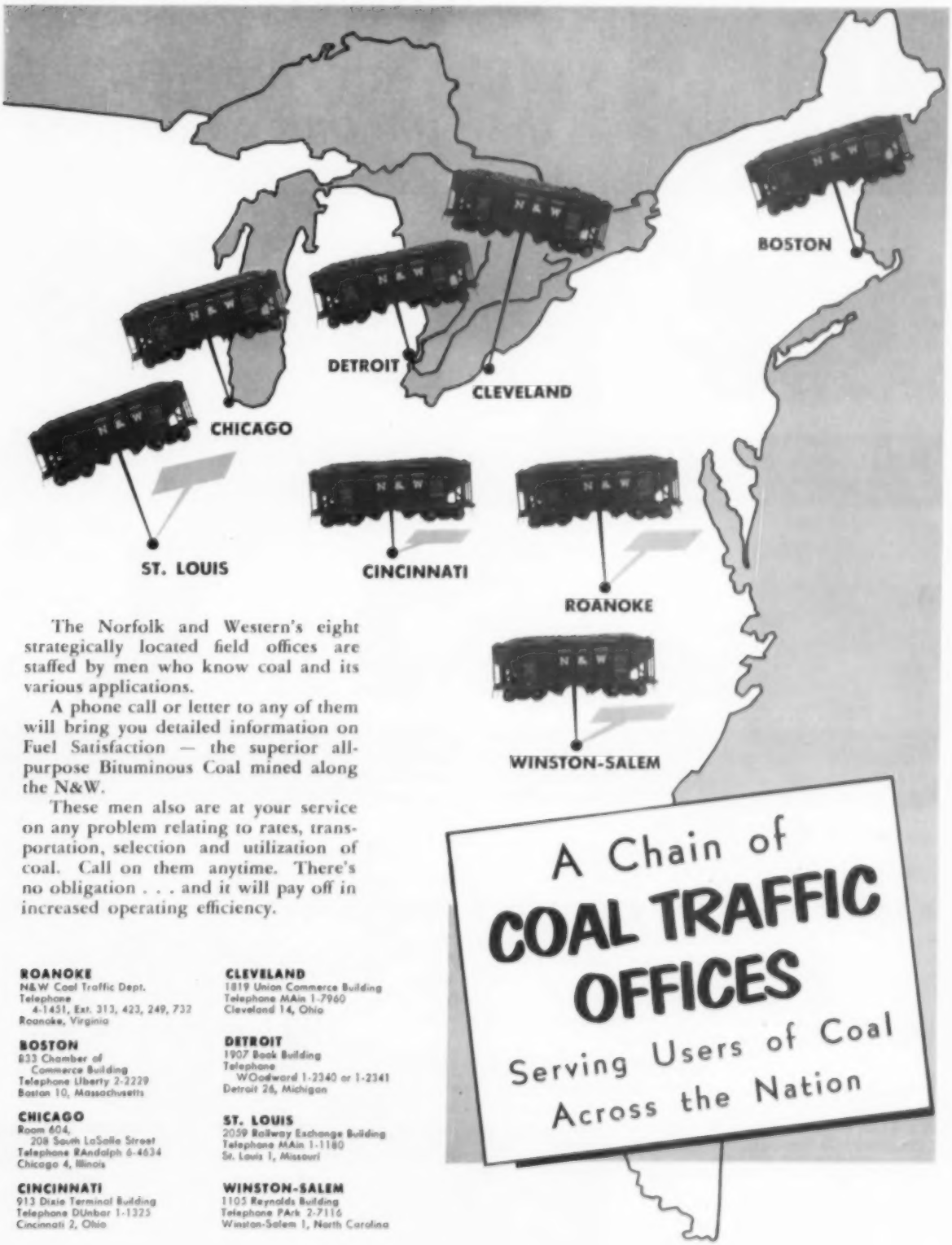
Previously, the company said, condensation was so severe at times that puddles would form on the floor to create a footing hazard. Excess moisture which air conditioning could not overcome would impair the operating efficiency of the machines. Frequent breakage of the warp or filling yarn would lower the quality of the product. Inspection costs mounted along with production costs.

In addition to correcting these problems, the 8 - in. by 8 - in. glass blocks also made possible a 50% reduction in boiler requirements. Where two boilers were required to maintain the desired 80-degree temperature in the mill, only one is now operated. This unit is operated only on Monday mornings following the Sunday shutdown. As soon as the mill temperature reaches the desired 80-degree level the heat is shut off. Heat energy from the machines then maintains the desired temperature.

Window breakage, a frequent occurrence with flat glass, has been practically eliminated and window washing is now done with a spray hose.

Increased daylighting, as well as control of condensation, was gained in the weave room of the Poinsett textile mill. Glass blocks direct incoming rays of the sun toward the ceiling and eliminate glare spots for employees.





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208 South LaSalle Street
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Chicago 4, Illinois

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Cincinnati 2, Ohio

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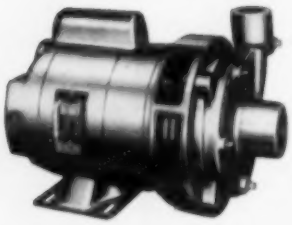
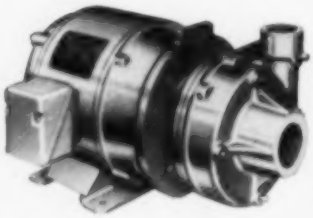
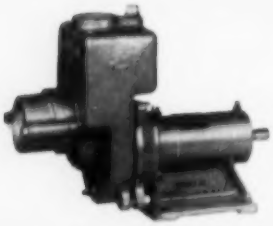


TYPE PE-A ¼-1½ hp. Facemount design NEW NEMA type motor. Compact, efficient, shaft seal equipped.



TYPE PE-200 2, 3, 5, 7½ hp. Economical, compact. Facemount design. Versatile, good looking.

TYPE PN ¼, ⅓, ½ hp. For low head pumping. Shaft seal equipped. New facemount NEMA type motor.



TYPE BSP ¾ hp. Close coupled, selfpriming pump. Excellently suited to high capacity pumping.

TYPE ESP ½, ¾, 1 hp. Facemount design. Ideal for swimming pools. Versatile, shaft seal equipped.

TYPE CP & TCP Vertical flanged suction pump. Open or explosion-proof motors. ¼ to 7½ hp. Excellent ratings.

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☐ Type BSP ☐ Type ESP ☐ Type CP
☐ Complete Line

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Company_____
Address_____
City_____ State_____
SPI

PUMP	HP	CAPACITIES	HEADS
PEA	¼-1½	to 65 gpm	to 110 ft.
PE 200	2, 3, 5, 7½	to 190 gpm	to 140 ft.
PN	¼, ⅓, ½	to 60 gpm	to 30 ft.
BSP	¾	to 78 gpm	to 55 ft.
ESP	½, ¾, 1	to 69 gpm	to 50 ft.
CP	¼-7½	to 250 gpm	to 100 ft.

Equipment . . . Supplies . . . Methods

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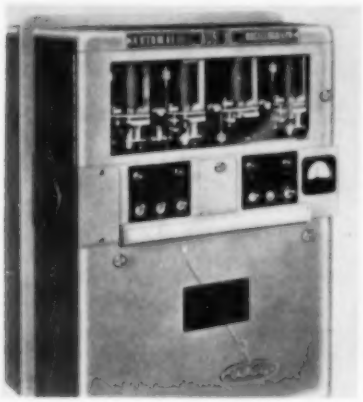
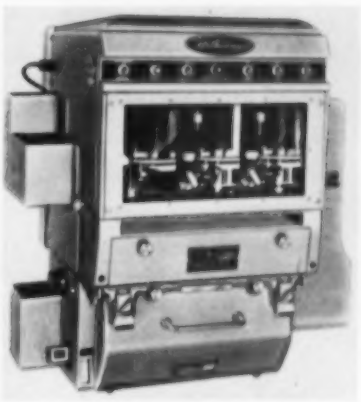




Automatic Oscillographs Locate Faults—Utilities

D-1 Automatic oscillographs produced by the **Hathaway Instrument Division,** Hamilton Watch Company, 5800 East Jewell Ave., Denver 22, Colorado, are used for recording unanticipated transients, such as faults in power systems. Fully automatic and high-speed starting, these instruments provide complete records of all abnormal conditions, revealing system performance under fault conditions.

They also record synchronizing power and the operation of relays and circuit breakers. A combination of different type starting relays monitor station **and** system for any fault. The oscillographs are designed for panel installations with convenient electrical connections accessible at the rear of the panel.

Hathaway's Model RS9-30 (left in photo) records up to 30 channels on a 12-in. chart, has four internal relays, simple cartridge loading, a focal-plane calibrating screen, and automatically replaces burned - out lamps.

The RS9-Fourteen (right) records up to 14 channels on a 10-in. chart and has three internal relays, magazine loading, calibrated viewing screen and individually adjustable recording beams.

Other design features and operational details are covered in Hathaway's Bulletins 1-20 and 1-21.

Petro-Engineering Service

D-2 A cost-free service providing practical assistance on problems involving fuels, lubricants and other products of petroleum is being offered manufacturing, power, and large service plants by the **Gulf Oil Corporation,** 1822 Gulf Bldg., Pittsburgh 30, Pa. Details are given in 24 page bulletin SP-8942.

Highly specialized knowledge and experience are required for application of many types of petroleum products in modern industrial operations. They must be chosen and applied with care — practical help must be provided on such problems as wear, maintenance, storage, dispensing and application schedules.

Type of problems on which Gulf's cost-free petro-engineering service provides practical help include: reducing number and variety of lubricants used; planning more efficient fuel and lubricant storage and dispensing facilities; reducing maintenance costs thru improved application of lubricants; selecting rust preventives according to exact kind of protection needed; establishing proper flushing procedure for old and new equipment, etc.

Masonry Saw (5-In-One)

D-3 A "Sta-Level Cutting Head" and "Hi-Lo Control Wheel" are two of the outstanding features in the new "Supermatic" — a masonry saw recently marketed by the **Clipper Manufacturing Company,** 2800 Warwick, Kansas City 8, Mo.

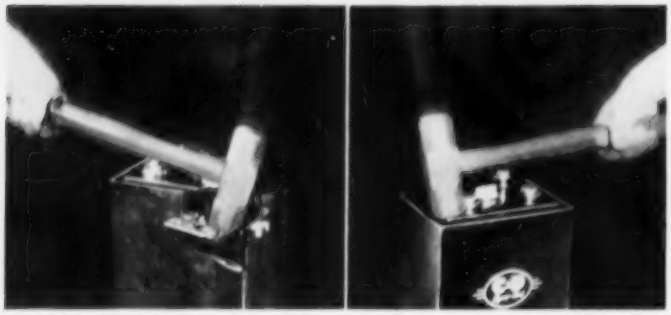
The Hi-Lo Control Wheel does everything quickly and safely, without the operator having to turn off the motor. It keeps the Sta-Level Cutting Head level ready to cut at any height. There are no levers or knobs to pull, no blade guard or head angle adjustments to make — and the saw is always in perfect alignment. Operator cannot cut thru conveyor cart or damage blades.

Masonry saw has a heavy duty cutting head powered by a 2 hp motor, which delivers up to 6¼ hp.

Clipper's Supermatic is 5-saws-in-one. It is a wet or dry masonry saw and can be quickly converted to a light duty concrete saw and a track saw. Frame extensions can be added to increase the saw width up to 6 ft, to cut sills, copings and large stone and masonry units. Circular No. 2017 gives details.

(Continued on Page 84)

Equipment, Supplies & Methods (Continued)



The 4-lb maul test—No sign of breakage with new battery material. In field testing, no replacement of the new material has been required in a year and a half.

For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 89

Battery Material Impact Resistant

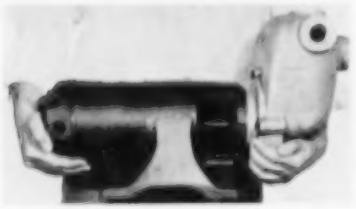
D-4 A new material (Hi-Impac) for industrial storage battery cell containers and covers that virtually eliminates battery breakage has been announced by **C & D Batteries, Inc.,** Washington & Cherry Sts., Conshohocken, Pa.

The new material replaces present standard materials in the C & D Slyver-Clad (R) line for industrjal trucks and mine batteries.

As a result, damage to battery cells, from dropping, collision between trucks, or from the impact of heavy objects falling on the battery is practicaly eliminated.

Lightweight Centrifugal Pump

D-5 A new self-priming, self-lubricating centrifugal pump that is lightweight and resists corrosion has been announced by the **Worthington Corporation,** Harrison, N. J.

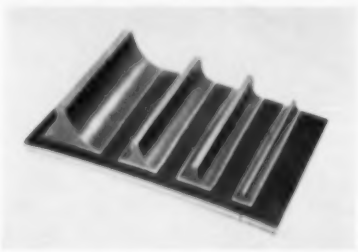


Available in three ratings — ½, ¾, and 1 hp — with a choice of 1 or 1½ in. suction and discharge openings, the new monobloc pump has dual discharge openings for flexibility in piping. The solid aluminum casing, head and impeller makes the pump extremely lightweight (the ¾ hp unit complete with motor weighs only 62 lb). The new pump has a rising head-capacity curve which makes it ideal for general service where a self-priming pump is required.

Both motor and engine driven units will be available up to 6" pipe size.

Economical Cleats for Inclined Conveyor Belts

D-6 REMA Cleats distributed by the **Flexible Steel Lacking Co.,** 4607 Lexington St., Chicago 44, Ill., are being used to great advantage on conveyor belts where the belts are inclined to the point where gravel, large wood chips or other items would have a tendency to slip or roll back down the belt.



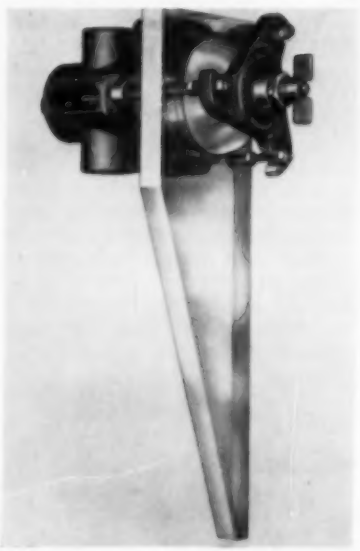
The cleats can be applied to the belt at 90° (across the belt) in the form of chevrons or "V's", along the sides of the belt to act as guide rails or in any pattern desired.

REMA Cleats are very economical, compared with regular cleated belts, and have proved exceptionally satisfactory in the field. They are available in 4 heights: 7/16", ¾", 1" and 1½", and in 36" lengths.

Solid Wedge Lighting in Liquid Leval Gage

D-7 A new Illuminator, EPL-56, announced by **Jerguson Gage & Valve Co.,** 80 Adams St., Burlington, Massachusetts, gives up to three times the illumination and three times the bulb life. It lights up entire gage glass length with a bright, evenly diffused light. There are no glare spots or blinding areas so the liquid level can be seen clearly and easily under all conditions.

Jerguson Illuminators are easily mounted on the back of transparent gages. They incorporate the principle of solid wedge lighting; illumination from a single bulb is reflected from the angular surface of the plastic wedge and is evenly diffused through the transparent gage glass.



Jerguson Illuminators are explosion-proof and are Underwriters' Laboratories Approved.

The relamping procedure has been tremendously simplified; a simple turn of the one thumb screw and the entire cover and bezel assembly lifts in one piece so the bulb can be replaced easily.

(*Continued on Page* 86)

For Fly Ash Collection...

Western Precipitation
presents
its latest development
in a quarter-century of
continuous advancement
in Mechanical Collectors

...The "9VGR" MULTICLONE!

Over 25 years ago

Western Precipitation Corporation pioneered the high-efficiency multiple-tube principle that has proven so superior it is now the pattern for the industry.

The Multiclone continues to be years ahead of all other centrifugal collectors because it incorporates the invaluable "know-how" gained through these many years of leadership in the field—leadership that is further emphasized by introduction of the 9VGR Multiclone, another important milestone in Multiclone's quarter-century of outstanding performance.

COTTRELL Electrical Precipitators
MULTICLONE Mechanical Collectors
CMP Combination Units
DUALAIRE Reverse-Jet Filters
HOLD-FLITE Processors

NEW 9VGR FEATURES...

1. *No need for continuous external support.*
2. *Easier and less costly to insulate.*
3. *Minimum dust stratification.*
4. *Improved dust distribution to all tubes.*
5. *Simpler installation, lower erection costs.*
6. *Freedom from leakage at all critical points so that full collection efficiency is obtained.*

Plus **The proven superiority of CAST IRON TUBES and VANES!**

Through the years, others have tried special alloy steels and so-called "miracle" metals, but nothing has proven as satisfactory *in actual field service* as cast iron. In the past quarter-century more than 270,000 Multiclone tubes have been placed in service with less than 1.85% replacement—*a performance record unequalled in the industry!*

There are many other advantages built into the 9VGR. There is a Multiclone representative near you who will be glad to supply complete details. Or write direct, asking for your free copy of Bulletin #M209 which contains full details.

Western Precipitation Corporation

Designers and Manufacturers of Equipment for Collection of Suspended Material from Gases ... and Equipment for the Process Industries

Main Offices: **1052 WEST NINTH STREET, LOS ANGELES 54, CALIFORNIA**

Chrysler Building, New York 17 • 1 North La Salle Street Building, Chicago 2 • Oliver Building, Pittsburgh 22 • 3252 Peachtree Road N. E., Atlanta 5 • Hobart Building, San Francisco 4

Precipitation Company of Canada Ltd., Dominion Square Building, Montreal

Representatives in all principal cities

Equipment, Supplies & Methods (Continued)

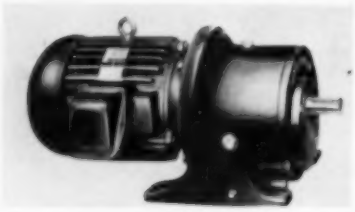
Hydraulic Control Pilot for Diaphragm Valves

D-8 A new pilot control valve for use with diaphragm actuated regulating valves has been announced by the **Atlas Valve Company,** 280 South St., Newark 5, New Jersey. It responds to small variations in controlled pressures in the flow line, and thereby readjusts the main regulator for precise throttling of the steam, gas or liquid flow. Its action is positive. The Atlas No. 811 pilot accurately positions diaphragm control valves used either as reducing valves or unloading valves.

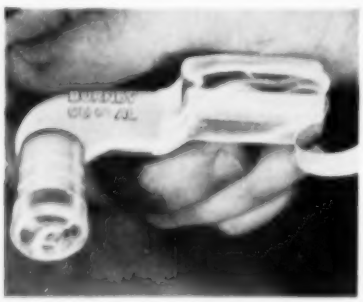
This pilot is a positive mechanical device designed to eliminate the costly and wasteful leak-off of hydraulic fluid while still retaining extremely sensitive control of the diaphragm control valve. Unit consists basically of a two-way valve actuated by a diaphragm opposed by a loading spring. Controlled pressure ranges are 3 - 15 psi, 10 - 40 psi and 25 - 100 psi. A minimum operating pressure of 30 psi is required.

Gear Motor

D-9 **The Rockwood Pulley Mfg. Co.,** 20 Crosby St., New York 13, N. Y. announces the "ritespeed" gear motor, offering simplicity with which the cartridge assembly and electric motor can be removed from the gearcase without touching the base of the unit.



All integral sizes have totally enclosed, fan-cooled motors, NEMA standard "D" flange. Motors are now available from stock in all speeds from ½ to 15 hp. Sizes from 20 hp to 75 hp can be supplied on a made-to-order basis.



Aluminum Tap Connections

D-10 To assure more dependable aluminum tap connections, **Burndy Corporation,** Norwalk, Conn., has introduced Stripsealed "Eltaps"—L-type compression connectors having both run and tap elements factory filled with Penetrox A, oxide-penetrating corrosion-preventing joint compound.

Burndy engineers, who determined that most failures of electrical connections involving aluminum can be traced to neglect to use the compound, have developed Stripsealing to make certain that Penetrox A will be applied automatically as each connector, tubular or open groove, is installed.

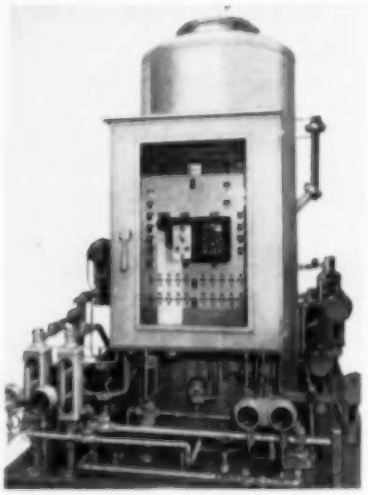
A special plastic dip applied directly over the joint compound seals in the proper quantity on the connector contact surfaces. The dipping operation's duration and temperature are controlled to avoid melting the compound and to form a perfect seal. When ready to install the Stripsealed connector, the lineman strips the seal by pulling a rip tape, color-coded for cable-size identification.

Stripsealed Eltaps are available for run conductors from #6 to #2 and taps from #10 to #2. In addition to protecting aluminum connections from corrosion, Stripsealing saves installation time by making it unnecessary for the lineman to scratch brush connectors, prevents connector oxidation in storage or transit, and assures use of the proper joint compound for each connector type.

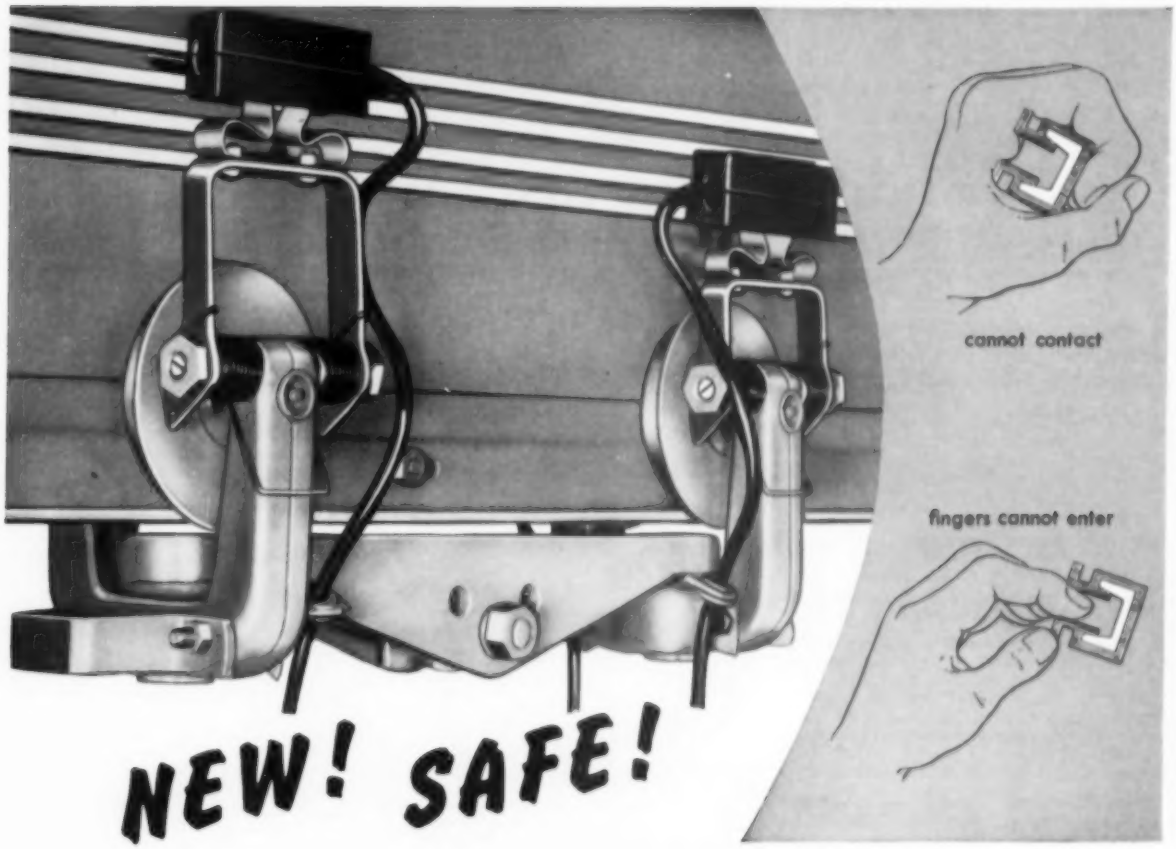
For More Free Data CIRCLE CODE NO. on the Handy Return Card — Page 89

Package Unit Produces High Purity Water

D-11 Fully - automatic "Mixed-Bed IonXchanger" developed by the **Illinois Water Treatment Company,** 840 Cedar St., Rockford, Illinois, is a "packaged" unit completely assembled at the factory. All gravels and resins are in place and unit is ready for operation after a minimum of connections.



The mixed-bed principle of ionXchange provides water that is free of silica and all ionizable solids with purity meter readings of over 1,000,000 ohms per cubic centimeter. Such water is highly desirable for high pressure boilers and associated turbines. In addition, many manufacturing and chemical processes have urgent need of such water. Illco-Way "Packaged" IonXchangers are available in sizes suitable for most low-make-up power plants. The unit consists of a regular mixed-bed column or tank, with associated external and internal piping, mounted on a heavy welded steel base. Automatic operation is provided by motor-operated valves, controlled by a conductivity meter and program timer to govern regeneration at proper intervals.



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For Monorail Track and Crane Systems

By covering its standard bus bar electrification with a specially designed polyvinyl chloride extrusion, American MonoRail now furnishes completely safe electrified systems.

This KANT-SHOCK shielding absolutely prevents accidental contact with live bus bars. It is impossible for an adult's finger to enter the shield.

A new type sliding shoe collector provides a floating contact throughout a monorail system regardless of any misalignment due to bent bars or at switch and inter-lock connections.

KANT-SHOCK Electrification positively eliminates all the hazards of open bar conductors — prevents costly accidents — protects employees — reduces insurance rates.

Write for KANT-SHOCK Bulletin KS-1

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AMERICAN MONORAIL COMPANY

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–INDEX OF HELPFUL BOOKLETS, BULLETINS, REFERENCE LITERATURE–

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

1—Package Boiler — New compact, low cost package unit (oil or gas fired) for small space requirements is described in Bulletin DK-1. Pressures to 325 psi, steam capacities to 45,000 lb/hr.—E. KEELER CO.

3—Boiler Seam Protector — Catalogue sheet describes and illustrates why H.R.T. boilers need refractory seam protection. — NATIONAL BOILER PROTECTOR CO.

4—Steam Generators — Bulletin AXY-1 describes auxiliary equipment and design features of the Amesteam Generator for sizes 10 through 600 hp and illustrates how this integrated design reduces cost and increases life and reliability.—AMES IRON WORKS, INC.

10—Water-Cooled Stoker — Catalog describes completely water-cooled Vibra-Grate stoker which burns low grade fuels without smoke at either low or high ratings. No dust collectors neccessary. — AMERICAN ENGINEERING COMPANY.

12—Spreader Stoker—Bulletin 897 — Describes a spreader stoker with overthrow rotors that provide exceptionally uniform fuel distribution. Available in stationary, hand dumping and power dumping grates, in many sizes for many types of application. Also burn various kinds of wood and refuse. — DETROIT STOKER CO.

13—Power Plant Equipment — 12 page booklet No. 1022-A gives details on combustion and boiler feedwater control, pressure reducing, desuperheating and automatic soot blowing — retractable and rotary. — COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

16 — Small Boiler Performance — Brochure shows how the packaged Ljungstrom air preheater boosts performance. Boilers as small as 25,000 lb/hr can have advantages of regenerative preheating—saves fuel, boosts output, and permits use of lower grade fuels.—THE AIR PREHEATER CORPORATION.

25 — Packaged Boilers — Bulletin PSG-2 has line drawings, photos, and engineering data on portable type units from 10,000 to 40,000 lb/hr steam capacities. In standard pressures of 175, 250, and 375 psi.—HENRY VOGT MACHINE CO.

35 — Unit Steam Boilers — Catalog AD-100 — Gives complete information on oil and gas fired "Self Contained" boilers, 15 to 500 hp, 15 to 250 psi for processing and for heating. Gives features, applications, efficiencies, capacities and dimensions.—CLEAVER-BROOKS CO.

81—Fly Ash and Dust Recovery — Engineering Booklet — Gives data and illustrations on the multiclone mechanical dust collector, showing basic principles and typical application for dust and fly ash recovery. — WESTERN PRECIPITATION CORP.

85 — Blow-Off Valves — Bulletin E-125 describes design and construction of quick-operating valves, angle valves, Y valves and duplex units specifically designed for boiler blow-off service. — EVERLASTING VALVE CO.

88—Industrial Burners — General Bulletin 751, 16 pages — Describes and illustrates industrial oil burners, gas burners, combination gas and oil burners for boilers, dryers, stills, retorts, kilns, etc., and fuel oil pumping and heating units which go therewith. — NATIONAL AIROIL BURNER CO.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

101—Heat Exchangers — Bulletin 1.1K5 describes exchangers widely used on engines, compressors and other machinery for cooling lube oil, jacket water, air and gas. Compact, standardized units in wide range of sizes. — ROSS HEAT EXCHANGER DIVISION.

104—Fans—Bulletins F-102 & F-200 describe Type "BL" and "BLH" fans offering high stability and efficiency for all classes of ventilation. Type "BLH" designed for high, broad efficiency curve on higher pressure jobs (6¾" water gauge and up). — BUFFALO FORGE COMPANY.

118—Rotary Pumps—Catalog 955, 8 pages—Describes and illustrates complete line of Roper Rotary Pump products. Sizes range from ¾ to 600 gpm for pressures up to 1000 psi. Has listing of materials of construction, performance data and dimensions.—GEO. D. ROPER CORPORATION.

120 — Continuous Blow-Off Equipment — Publication No. 5700 shows how equipment can effect substantial savings in heat and fuel by returning the heat contained in the blowoff. System also maintains uniform dissolved solids concentration in boiler. Typical applications and lists of users are included. — COCHRANE CORPORATION.

123 — Slurry Pump — Catalog describes the new SP-90 slurry pump which permits proportion of slurries in the mix tank to remain constant, with pumping rates variable from maximum to 1/5 of maximum.—MANZEL.

124—Blowers, Fans, Heaters, Drives —Bulletin B-4729 — Describes the comprehensive and complete line of equipment manufactured by American Blower for practically every known air handling requirement and for smooth transmission of power through Gyrol fluid drives.—AMERICAN BLOWER CORP.

129—Portable Compressor—Bulletin 2307 describes Gyro-Flo 85, an oil-cooled, single-stage rotary sliding vane compressor, the lightest portable ever developed.—INGERSOLL-RAND CO.

132 — High Temperature Air Handling — Bulletin 702 describes Type XL Fans equipped with air cooled bearings for temperatures up to 750 F. — CLARAGE FAN COMPANY.

141—Cradle Mounted Pumps—Bulletin 247, 4 pages — Illustrates and describes Cradle Mounted "Compacunit" pumps. Types available are listed, with metal specifications, dimensions, unusual features, and other pertinent data. — WARREN STEAM PUMP COMPANY, INC.

Note Your New Reader SERVICE on Advertisements

167—Rotary Pumps — Bulletin 307— Describes the features and advantages, and outlines the engineering details of Blackmer rotary pumps. These have been manufactured since 1904 and incorporate the outstanding advantages of "automatic adjustment for wear," and economical replacement of parts. — BLACKMER PUMP CO.

INSTRUMENTS—METERS CONTROLS—REGULATORS

203—Open Channel Flow Meters — Bulletin M22-5, 12 pages — Describes principle of operation and

engineering features of Bailey Type FF meter which measures the flow of liquids with suspended solids for water supply and waste treatment applications in industrial plants. — BAILEY METER COMPANY.

206 — Static Switching — Bulletin GEA-6364 describes element for industrial control systems — what it is, what it looks like, how it works, advantages over relay control. — GENERAL ELECTRIC CO., Industry Control Dept.

207—Automatic Oscillograph—Bulletin describes features of the new RS-9 units which give more channels, faster starting, more types of starting relays, sharper traces, and lower expansion cost. — HATHAWAY INSTRUMENT COMPANY.

209—Liquid Level Controls—Catalog describes controls for almost any liquid, at any pressure, at any temperature. Can be furnished in top-mounting, side-mounting styles, or as external float cage units. Almost unlimited application.—MAGNETROL, INC.

225—Cooling Controls — Self-powered controls for compressors, stills, solvent coolers, degreasers, small engines, etc., described in Bulletin 710B; operational and hook-up sketches.—SARCO COMPANY, INC.

228—Gauge Illuminator — Supplement ML — Describes a high power mercury lamp in special housing to fit back of water gauge inserts, to increase visibility of water level reading.—RELIANCE GAUGE COLUMN CO.

242—Control Valves—Catalog 1500-B—Illustrated—Describes complete line of Domotor, solenoid-operated and handwheel single seat control valves for handling difficult fluids under extremes of temperature and pressure. Offers full, unrestricted flow, positive plug and seat alignment and directional flow flexibility.—THE ANNIN COMPANY.

254—Pilot Pressure Controller—Bulletin D-4 — Describes the dependable Wizard pilot, Series 4100U, in a new gas type weatherproof case for flush or surface panel mounting, available with either bellows or Bourdon tube measuring elements for pressures from inches of water to 10,000 psi.—FISHER GOVERNOR CO.

287—Color-Port Water Gage—Bulletin WG-1814 describes the new gage for high pressure boilers (up to 3300 psi). Gives full details on design and operation and shows how it gives greater visibility and greatly reduced maintenance requirements. —YARNALL-WARING COMPANY.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

304—Backing Rings — Bulletin 56-2 describes rings designed for fast economical fit-up in piping, tubing, fittings and valves. Shows how rings assure uniform complete-penetration welds and ease of handling in both shop and field. Carbon steel, wrought iron, chrome alloys, stainless, alumi-

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num and copper.—ROBVON BACKING RING COMPANY.

305—Industrial Heating — Catalog 50, 50 pages — Gives data on the type and size of electric heating units and similar equipment for industrial heating needs. Detailed diagrams and photographs describe applications.—EDWIN L. WIEGAND CO.

334—Electric Power Hammer—Drilling, routing, cleaning, caulking, chipping are among many maintenance and construction applications described in Bul. 5199. Drills holes up to 1⅛" in diameter; 2300 blows per minute; weighs only 12 lb, 13 oz. —INGERSOLL-RAND.

340—Gas Fired Infra-Red Heaters—Bulletin PB 1-56 describes design and application of Panelbloc industrial-commercial infra-red heater. Requires no fan, blower or electrical connections.—THERMOBLOC DIV., PRAT-DANIEL CORP.

368—Wrought Iron—"101 Uses for Wrought Iron"—Gives a brief, comprehensive review of why, how and where wrought iron is used, coupled with a discussion of its economic justification.—A. M. BYERS COMPANY.

375—Welding Service — Sheet TIS 2600 describes new welding advisory service. Survey highlights operations where metal joining, machinery repair and overlaying for wear resistance can be increased profitably. — EUTECTIC WELDING ALLOYS CORPORATION.

376—Safety Grating & Treads—Bul. R-655 describes Relgrit, a non-absorbent tough abrasive baked into V-shaped openings along top edges. Non-skid even when wet, muddy or oil soaked. — RELIANCE STEEL PRODUCTS CO.

386—Rigid Frame Buildings—8 page bulletin "Dixisteel Rigid Frame Buildings"—low cost, flexibility of design, durability, and minimum maintenance; also triangular or bow-string truss all-steel roof systems; fabricated for rapid erection. —ATLANTIC STEEL COMPANY.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

401—Underground Pipe Insulation—4 p brochure L-102-F-56 discusses problems of underground pipe insulation and explains how Gilsulates' special properties overcome them. On-the-job photos illustrate ease and speed of application. Thermal coefficients of transmission and other technical data and specifications are given.—AMERICAN GILSONITE COMPANY.

416—Control Valves — Illustrated Cat. 305 contains detailed specifications on air-operated control valves. All usual types are described. Technical data are included as an aid to selection.—MASON-NEILAN DIV.

417—Welding Fittings — 192 page Cat. 54 gives design data on piping and piping application including digests of specifications, working pressures, design formulas, etc. Covers welding fittings, prefabricated pipe, forged steel flanges, and pipe coils. — MIDWEST PIPING COMPANY, INC.

455—Plastic Valves & Fittings — Brochure covers company's extensive line of new corrosion-resistant valves and pipe fittings molded from rigid polyvinyl chloride. — WALWORTH COMPANY.

461 — Reducing Valves — Bulletin 1027 describes Type CV-D (diaphragm) and Type CV-P (pistol) reducing valves for application at unlimited pressures for pipe sizes up to 16". Either direct or reverse action; high rangeability.—COPES-VULCAN DIVISION, BLAW-KNOX COMPANY.

479—Multiport Drainers — Publication 5201 containing 8 pages describes units for removing large quantities of condensate under vacuum or pressures, as from evaporators, heaters, separators, coils, or steam lines (up to 200 psi maximum). Lists discharge capacities, shows features and typical installa-

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375	376	386	401	416	417	455	461	479
480	493	502	505	512	545	553	564	570
576	601	603	604	606	626	648	656	672
700	701	702	703	704	721	723	731	764
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480—Piping Flexibility Analysis — 12 page booklet shows how various flexibility analyses & techniques can cut piping design and construction costs. — THE M. W. KELLOGG COMPANY.

493 — Unions & Valves — Complete company line of pipe unions and check valves covered in Catalog 56. New Four-Star lug nut unions & spring controlled check valves included. — CATAWISSA VALVE & FITTINGS COMPANY.

MAINTENANCE PACKING GASKETS, LUBRICATION

502—Hazardous Liquid Gasket Material — How type 662 gaskets can stand varying climatic conditions without drying, shrinking, or hardening described in Bulletin AD-146. For use against gasoline, water and oil at temperatures up to 300 F. Has Underwriters' Laboratories, Inc. approval. — THE GARLOCK PACKING COMPANY.

505—Metal Cutters — Bulletin 655 shows actual cost figures on various metal cutting jobs (bolt, rod, wire, chain, etc.) by using cutters, hand and power-operated cutters.—H. K. PORTER INC.

512—Lubricator Vacuum Type Pumping Unit—If your plant is experiencing difficulty with visibility and excessive maintenance on lubricator sight glasses, the new 82 vacuum pumping unit will offer lower costs. Form 1263 gives principle of operation and advantages—MANZEL.

545—Correct Lubrication — "Lubriplate Data Book" shows importance of providing and maintaining proper and economical maintenance of all types of plant machinery thru adequate lubrication. — FISKE BROTHERS REFINING CO.

553—Tool-Box Size Hoist—Bulletin 388H describes a lever operated portable tool that lifts and pulls. Is built like a hoist, with gearing, load brake and anti-friction bearings, instead of ratchet lever hoist design. 2000 lb and 4000 lb sizes.—SHAW-BOX CRANE & HOIST DIVISION.

564 — Anti-Corrosive Paints — Bulletin, "The Application of Subox and Subalox Paints" — Gives the story of a complete paint system for weather, moisture and alkali protection, with details as to application. — SUBOX, INC.

570—Multi-Purpose Grease—Bulletins describe new single product Gulfcrown grease (4 consistencies) that does the work of many — simplifies application and avoids errors, reduces inventory & cuts lubrication costs; grease gun or centralized system application. — GULF OIL CORPORATION.

576—Mechanical Sealing — Catalog 480, a valuable reference book for maintenance engineers illustrates types of Dura Seals for specific temperature, pressure and fluid conditions. — DURAMETALLIC CORPORATION.

ENGINES, DRIVES POWER TRANSMISSION MATERIALS HANDLING

601—Fluid Drive — Bul. 9819 describes features of improved Type T Gyrol Fluid Drive for general industrial applications. Applications and advantages noted; rating charts give hp ranges for various engine and electric motor drive speeds. — AMERICAN BLOWER CORPORATION.

603 — Monorail Case Studies — File F-1—Offers 20 new studies of engineered monorail applications in various industries. Factual information, complete with photos and plain drawings. — AMERICAN MONORAIL CO.

604—Motor Units — Catalog 51 describes motor units for accurate performance and longer, lower cost life for operation of valves, floorstands and sluice gates. — CHAPMAN VALVE MANUFACTURING CO.

606—Power-Rotated Jib Crane—Bulletin describes all-electric 360° revolving jib cranes in 6, 7½, 10 and 15 ton capacities which provide power handling for 1936 sq ft of floor space. Design permits fraction-of-an-inch control.—R. G. LETOURNEAU, INC.

626—Personnel Elevators — Industrial personnel elevators, available in 1, 2, and 4 passenger sizes (300-1000 lb capacity), described in Catalog 5A-156. Gives specifications and dimensional layouts. — J. B. EHRSAM & SONS MFG. CO.

648—Belt Fastening Tools — Bulletins F-110 and F-111—Describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith. — FLEXIBLE STEEL LACING CO.

656—Speed Reduction—Bulletin 191 outlines three styles of speed reduction — integral gear motors, speed reducers with separate motors, and speed reducers alone. Highlights all the important engineering advantages of Sterling drives and contains important information for consideration when selecting speed reducers. — STERLING ELECTRIC MOTORS, INC.

672—Electric Traveling Cranes — Type SB heavy duty overhead cranes (from 5 to 40 tons capacity) described in Catalog 219. Single or with high speed auxiliary hoist; choice of speeds and for any spans required. — SHAW-BOX CRANE & HOIST DIVISION.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

700 — Water Conditioners — 4 p brochure describes Anco water conditioners for hot-water and humidifying systems. Stop rust and corrosion; prevent discolored water. — ANDERSON CHEMICAL COMPANY, INC.

701—Exhausting Corrosive Fumes—Bulletin 702-A shows how corrosive fumes can be exhausted with rubber, lead lined or specially coated fans.—CLARAGE FAN CO.

702—Water Conditioning — Bulletin 611A, 20 pages—Gives comprehensive data on methods of conditioning water for boiler, process and general use, featuring zeolite water softeners of "double-check" design. Data on filters, purifiers, zeolites, ion-exchange resins, de-gasitors. — ELGIN SOFTENER CORPORATION.

703—Air Conditioning—Bulletins 112 & 122 describe "controlled humidity" method where cooling and heating functions are made completely separate from adding or taking away moisture. No moisture sensitive instruments needed in flexible & compact design.—NIAGARA BLOWER CO.

704—Water Conditioning—Brochure describes company's engineering services—zeolite water softeners, filters and purifiers, modernized and rebuilt water softeners, aerators and degasitors and process and boiler water conditioning. — SOUTHERN WATER CONDITIONING, INC.

721—What Type Collector?—Reprint 102 discusses control of industrial dusts and fly ash and features P-D Collector Systems. — THE THERMIX CORPORATION.

723—Dust Collection — Catalog describes mechanical and electrical systems which meet most rigid anti-air-pollution codes; low resistance fly ash collector which combines top efficiency with low draft loss for natural or forced draft installations. — BUELL ENGINEERING COMPANY.

731—Film Type Exchangers—Bulletin HE-7 describes typical installations. Units can be cleaned while in operation. Serve as jacket water coolers, feedwater heaters, sulphuric acid coolers, etc., and can be designed to cool or heat any liquid and to condense or evaporate any fluid. — HENRY VOGT MACHINE CO.

764—Cooling Equipment — Bulletin 80-D describes company's complete line of commercial and industrial equipment—operating principles, design features, etc.—FRICK CO.

ELECTRICAL

802—Small Relays—Simple solenoid design with only one moving part described in Bulletin 700. Silver alloy contacts need no cleaning, filing, or other maintenance. — ALLEN-BRADLEY CO.

805—Power Factor Correction — 24 page catalog 50B shows how you can cut power costs by installing correction capacitors on motors and other inductive electrical equipment. Greater loads can be handled from existing circuits. Wiring, transform-

(Continued on Page 92)

er and switchgear costs can be greatly minimized in new installations.—SPRAGUE ELECTRIC CO.

OPERATING AIDS SUPPLIES & MISCL.

909—Industrial Skin Cleanser—Folder describes Vi-Lan Clean, a non-alkaline, non-acid, all-purpose antiseptic skin cleanser that prevents dermatitis and other skin conditions. Self-service dispensing units. — DAMERON ENTERPRISES, INC.

911—Rescue Kit—Bulletin 733 describes unit and procedures for freeing persons trapped in cars, buildings, under machines, in elevators, etc.—H. K. PORTER INC.

937—Steel Measuring Tapes—Complete catalog describes full line of measuring tapes from 6 to 100 ft, including wide blade tape with upright measurements. — EVANS RULE CO.

O-7—Air-Cooled Compressors — 16 page bulletin shows complete line of small air-cooled compressors for industrial, automotive, commercial and general use. Offers both one and two stage compressors with working pressures ranging from 85 to 175 psi — bare compressors and those with horizontal and vertical tanks. Gives complete specifications for each model.—GARDNER-DENVER CO., Quincy, Ill.

O-8—Protective Equipment—32 page catalog shows how Charco high voltage protective equipment is carefully manufactured and tested. Describes and illustrates many products and gives clear, concise instructions as to proper care and use of high voltage rubber protective equipment. — CHARLESTON RUBBER CO., Stark Industrial Park, Charleston, S. C.

O-9—Color-Coded Gaskets & Shims —4 page folder describes Color-Plast, a plastic material used in a system in which each gauge of a gasket, shim, spacer, or washer is made in its own distinctive color, making possible instant selection of the correct gauge. Dimensionally stable, tear-resistant and self-sealing. — GENERAL GASKET INC., Industrial Road, Clifton, N. J.

O-10—Refractory Castables—Bulletin No. R-40 describes the use of Kaocrete-32, high temperature refractory castable, in boiler ashpits. Discusses various methods of ash removal and maintenance problems peculiar to each. Illustrates four different installations where the use of the material has reduced maintenance costs.—BABCOCK & WILCOX CO., Refractories Division, 161 E. 42nd St., New York 17, N. Y.

O-11—Controls for Liquids & Gases —Bulletin 005 lists all major Simplex equipment for the measurement and control of liquids and gases. Illustrates many types of controllers, gauges, manometers, recorders, meters, valves, Venturi tubes, etc.—all applicable for water and sewage works, power and processing industries. — SIMPLEX VALVE & METER CO., Lancaster, Pa.

O-12—Indoor Power Centers—Bulletin CS-1010 gives engineering data, weight, dimensions and detailed schematic drawings of indoor power center transformers for 300 kva and below.—KUHLMAN ELECTRIC CO., Transformer Equipments Sales Office, Bay City, Michigan.

O-13—Refractory Products—Bulletin "Reliable Refractories" lists brand names and typical applications of refractory products. Includes information on all classes of fire clay brick plus 70% Alumina Brick. Information on 25 different refractory specialties also available. — IRONTON FIRE BRICK CO., Ironton, Ohio.

O-14—Steel Tubing & Fittings — 6 page Bulletin No. V-157 describes Vacu-Flo steel tubing and fittings for vacuum systems and conveying lines. Gives detailed specification charts for various fittings and tubing. — H-P PRODUCTS, INC., Louisville, Ohio.

O-15—Teflon Lined Pipe — 2 page Bulletin T-100 details the application of Teflon as a liner for schedule 80 steel pipe, solving the toughest corrosion problems in chemical, petroleum, pharmaceutical, food processing, and other allied industries. — HALOCARBON DIV., HAVEG INDUSTRIES, INC., 900 Greenbank Rd., Wilmington 8, Delaware.

O-16 — Cooling Towers — Bulletin 5.1.902 Rev. 4 gives general features, optional accessories, recommended specifications, and typical installations of cooling towers for air conditioning and industrial service. The two towers, Series "B" and Series "R", are compared by mechanical features, engineering data, dimensions and general arrangement.—J. F. PRITCHARD & CO. OF CALIFORNIA, Div. of J. F. Pritchard & Co., 4625 Roanoke Parkway, Kansas City 12, Mo.

O-17—Industrial Insulating Material —Catalog lists standard sizes, thicknesses, and thermal conductivities for more than 20 types of heat and cold insulations for equipment and piping. Includes temperature-thickness recommendations for each. Describes typical applications and provides application instructions for the spun mineral wool industrial insulating products. — BALDWIN-HILL CO., Engineering Dept., 500 Breunig Ave., Trenton 2, N. J.

Books

Mechanical Engineering Practice — Fifth Edition

By Charles F. Shoop and George L. Tuve

Published by McGraw-Hill Book Company, Inc.

330 West 42nd St., New York 36, New York

460 pages

Price, $7.00

This book, which will prove to be an excellent laboratory reference text for the engineering student as well as a sound reference book for the practicing engineer, present measurement of technical and economic performance of machines and equipment as a major engineering assignment and calls attention to the precise requirements of the codes and standards sponsored by various professional groups.

This new edition gives recent trends, includes much new material, and places special emphasis on new techniques for mechanical measurements, dynamic characteristics of processes and automatic control, the latter promoting a new chapter, "Characteristics of Automatic Controls," co-authored by Professor Lawrence G. Seigel.

Fundamentals of Vibration Analysis

By N. O. Myklestad

Published by McGraw-Hill Book Company, Inc.

330 West 42nd St., New York 36, New York

260 pages

Price, $6.50

An appropriate text for training purposes in industrial organizations. The objective is to give the reader a thorough understanding of vibrations from a basic point of view rather than by presenting routine methods of analysis. Numerous examples and problems aid the readers' understanding of the methods explained in the text.

New boiler at Mando burns coal the modern way for economical steam generation

Consult an engineering firm

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

facts you should know about coal

In most industrial areas, bituminous coal is the lowest-cost fuel available • Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems can cut your labor cost to a minimum. Coal is the safest fuel to store and use • No smoke or dust problems when coal is burned with modern equipment • Between America's vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

Mando—the Minnesota and Ontario Paper Co.—is keeping pace with continuing production expansion. The firm recently installed in its plant at International Falls, Minn., one of the largest modern single-pass boilers in the pulp and paper industry. It is designed to produce 240,000 lbs. of steam an hour, bringing the mill's steam generating capacity to 960,000 lbs./hr. The new boiler has 22,500 sq. ft. of heating surface and required 300,000 lbs. of steel in its cor struction. It will use 775,000 gallons of water a day and, for economy, will burn pulverized coal as a primary fuel—300 tons daily!

For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

BITUMINOUS COAL INSTITUTE
Southern Building • Washington 5, D. C.

News for the South (Continued)

York Corp.—Southwest

Charles P. Strickland, Jr., has been named Industrial Sales Manager of the Southwest District for the **York Corporation,** subsidiary of Borg-Warner.

Mr. Strickland, in his new assignment, will be responsible for the sale of York industrial air conditioning and refrigeration products in the states of Louisiana and Texas and portions of Alabama, Arkansas, Mississippi, and New Mexico. His headquarters will be in **Houston, Texas.**

BullDog Electric—Kentucky

BullDog Electric Products Company, Detroit, has announced the assignment of **John G. Freihaut** to its **Louisville** District Office. Merle P. Spurrell, General Sales Manager of BullDog, stated in making this announcement that Freihaut will work under the direct supervision of **Robert W. Spargur,** Louisville District Manager.

Freihaut joins BullDog after tenures with Standard Oil Company of New Jersey (1949-52), Field Engineer; Servel Inc., Evansville, Indiana (1952-54), Electrical Engineer; and Evansville Supply Company (1954 to present), Electrical Sales Engineer.

He is an electrical engineering graduate of Purdue University and a Registered Professional Engineer, State of Indiana. In addition, Freihaut is a member of the National Society of Professional Engineers and the American Institute of Electrical Engineers.

Fischer & Porter—Fla.

Fischer & Porter Co., manufacturers of complete process instrumentation, has announced the opening of an office in the Carib Theatre Building, **Clearwater, Florida. Robert Wenzel,** of F&P's Nutley, N. J. office, will use the Clearwater office to cover the area below Levy, Marion and Volusia counties.

This makes the third Florida office for the Hatboro, Pa. organization. **Robert Craig** represents F&P in Pensacola. **William Berglund,** District Manager, is stationed at Jacksonville.

Robertshaw-Fulton Buys Beta

Robertshaw-Fulton Controls Company has announced the acquisition of **The Beta Corporation,** Richmond, Va., manufacturers of specialized vibration monitoring equipment.

Beta Corporation's operation will be moved to Philadelphia and consolidated with the Fielden Instrument Division, a unit of Robertshaw-Fulton.

Beta Corporation is a pioneer in the development of a variety of sensitive vibration monitors, capable of detecting faulty performance in large pumps, motors, engines, fans, automatic tools, turbines, and other rotating and reciprocating machines.

Hamilton Rubber Expands

John Cochran, recently appointed as Branch Manager for **Hamilton Rubber Mfg. Corporation's** Southern Division is supervising an enlarged sales force from the Company's sales office and warehouse at 649 Ponders Ave., Atlanta, Ga.

Cochran brings to his new position ten years' experience in the mechanical rubber goods field, including factory, sales office, and outside selling experience in Georgia, North Carolina, South Carolina and Tennessee.

Supervising sales of Hamilton's complete line of industrial rubber goods, Cochran states that one-day delivery is available to distributors in Georgia, Alabama, Florida, South Carolina, North Carolina, and Tennessee. Salesmen are now servicing the following territories:

Georgia — William C. Faulkner, with 8 years sales experience in the textile, mill, contractors' supplies, builders' hardware and industrial rubber goods fields.

Florida—W. Beta Coker, before joining Hamilton in 1953, spent 30 years as a sales representative for a Florida industrial equipment distributor.

South Carolina—Joshua B. Montgomery brings 10 years of sales experience to Hamilton in the textile, mill supplies, textile machinery and general industrial mill fields.

Tennessee—Chester L. Butts has represented major rubber manufacturing companies for 28 years in all phases of industry. Butts has extensive specialized knowledge of conveyor systems.

Centrifugal Compressor Design Meets Higher Air Supply Requirements for Florida Pant

An indication of a trend in power plant operation toward higher duty and air supply requirements is found in a large capacity centrifugal compressor delivered by **American Blower Corporation.** This compressor is the third of a four-unit group to be used in furnishing air for a cyclone fired boiler in a new power station designed by **Stone & Webster Engineering Corp.,** and owned and operated by **Tampa Electric Co.,** Tampa, Florida.

Compressors incorporate 48-in. intake and discharge connections designed with unobstructed diffuser passages for high efficiency operation. They are of welded heavy-gauge steel construction. Each is driven by a weather protected 1000 hp, 1800 rpm squirrel cage induction motor. The 48-in. unit is rated for delivery of 325,000 lb of air per hour (corresponding to 78,200 cu ft per min) at 65.5-in. w. g. static pressure. Total capacity of the group of four compressors is 1,300,000 lb of air per hour.

FACT: The new Life-Line A has stronger insulation than any motor on the market

Meaning what? Simply that the new Westinghouse Life-Line® "A" motor with new *fortified insulation* can withstand heavier overloads and operate at higher temperatures than any other motor you can buy. That's electrical system improvement!

There are equally important advances in the Life-Line "A" mechanical and lubrication systems. It takes the right combination of *all three systems* to build industry's most preferred "power package".

Get all the facts from your Westinghouse sales engineer —The Man With The Facts. J-21894-A

YOU CAN BE SURE... IF IT'S Westinghouse

NEWS BRIEFS About Your Equipment Manufacturers

George Stabenow has been elected vice president in charge of engineering by the **International Boiler Works Company.**

At the recent annual meeting in New Orleans the **Hydraulic Institute,** national trade association of pump manufacturers, elected **Noble Dean, Jr.,** president and **Wayne Staley** vice president. Mr. Dean is vice president and treasurer of **Dean Brothers Pumps, Inc.** Mr. Staley is vice president of sales for the **Duriron Company,** Dayton, Ohio.

Wayne Conway, formerly Eastern district manager, Philadelphia, for **The American Monorail Company,** is now sales manager of the Eastern Div., with headquarters in Cleveland. **Allen Reinart,** replaces Conway as district manager in Philadelphia.

Roy M. Lynch, recently retired from the American Gas & Electric Service Corporation, is now connected with the **National Conveyors Company,** Fairview, New Jersey, and will devote his efforts to the field of hydraulic ash handling systems.

Reznor Manufacturing Co. has purchased the assets of Arthur A. Olson & Company, manufacturers of stainless steel direct-fired gas and oil heaters. Purpose is to expand Reznor line into units of larger capacities.

George Vila is now vice president and general manager, **Earle Ebers** is assistant general manager, and **Harold Parsekian** general sales manager of the Naugatuck Chemical division, **United States Rubber Co.**

Warren Pumps, Inc.

The Warren Steam Pump Company has changed the Company name to **Warren Pumps, Inc.** Mr. D. B. Gilman, Executive Vice President of the 60-year-old concern states that the change was made primarily to remove the implication that the company manufactures reciprocating pumps only.

Warren Pumps, Inc., has been manufacturing reciprocating pumps since 1897 and centrifugal pumps since 1924. In 1950 the company acquired the Quimby Pump Company and since then has been manufacturing rotary and screw pumps. Warren pumps serve all industrial, municipal, and marine requirements.

With headquarters and factory in Warren, Mass., the company recently announced plans to open a second plant at Peace Dale, Rhode Island.

Earl Erich Sales Mgr. of Tube Turns Plastics, Inc.

Carl B. McLaughlin, executive vice president of **Tube Turns Plastics, Inc.,** has announced the appointment of **Earl Erich** as sales manager of the company.

A specialist in solving corrosion problems, Mr. Erich began his business career as a research chemist for The Atlas Mineral Products Company. Later he organized the company's Thermoplastics Division.

Erich joined the technical service staff of Tube Turns Plastics, Inc. in January, 1955. In May, 1955 he was placed in charge of sales programs on the West Coast and in the Southwest. He was made assistant sales manager in January, 1956.

Tube Turns Plastics, Inc. manufactures pipe fittings, flanges and valves of unplasticized polyvinyl chloride.

Cash—New Representatives

A. W. Cash Company and its subsidiary **Cash Standard Stacon Corp.,** both of Decatur, Ill., have announced the appointment of three new representatives for the Cash Standard and Cash Standard Stacon lines of pressure, temperature, hydraulic, process and combustion control equipment.

In the **southeast Texas** area: **Gay Sales Company Associates,** 420 Sul Ross St., P. O. Box 13232, Houston, Tex.

In the **east Tennessee** and **southwest Kentucky** area: **McGinnis-Hill Co.,** 4809 Clinton Highway, Knoxville, Tenn.

In the **Tulsa** area: **Arduses and Co.,** P. O. Box 4267, Tulsa 9, Okla.

Georgia Power Construction

A 1957 construction budget of more than $51,000,000, the largest in the **Georgia Power Company's** history, was recently approved by the company's board of directors. This figure compares with $40,000,000 spent in 1956.

In addition to this record expenditure, John J. McDonough, president, said approximately $11,000,000 in cash would be paid for the properties of the Georgia Power and Light Company and about $2,400,000 would be invested in new and improved facilities in the South Georgia area. The Georgia Power Company will also assume the bonded debt of the Georgia Power and Light Company amounting to $7,705,000.

The largest single item in the Georgia Power budget is the continuation of work on two 125,000 kw generating units at **Plant Yates** near Newnan. The first of the two new generating units will come into service in June of 1957 and the second in June of 1958.

Work will be started during the year on the construction of the **Oliver dam** on the Chattahoochee river at Columbus, provided a license for the Middle Chattahoochee development is received from the Federal Power Commission. The plant is expected to be completed in 1959.

Construction of a second unit of 75,000 kw will be begun at **Plant McManus,** the company's steam-electric generating plant at Brunswick. Completion is scheduled in 1959.

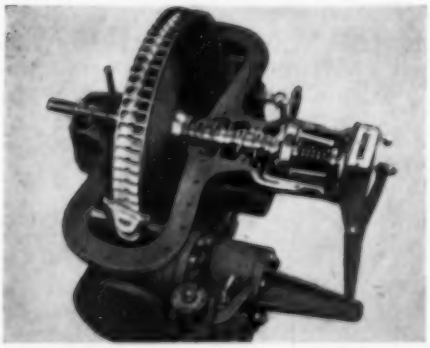
Bristol—Houston

The Bristol Company of Waterbury, Conn. has recently opened a new branch factory and warehouse in **Houston, Texas** — a move which reflects the shifting market for automatic controlling, recording, and telemetering instruments, some of the company's major products.

Today the petroleum and chemical processing industries represent two of the top three major markets for instrumentation and control equipment, accounting between them for about one-third of the industry's total sales. Also, according to the 1954 Census of Manufacturers, 17% of the petroleum refining and 6.6% of the chemical processing plants of the United States are located in the five southwestern states of Texas, Louisiana, Oklahoma, Arkansas, and Kansas.

TURBINE BLADES CAN'T FOUL!

The Terry solid-wheel turbine is of the impulse, helical flow type. The steam issues from an expanding nozzle at high velocity and enters the wheel bucket where its direction is reversed 180°. As this single reversal uses but a portion of the available energy, the steam is returned to the wheel several times until practically all of the energy has been utilized. This principle makes possible the efficient use of steam in a single-piece, almost indestructible wheel.



TERRY

TT-1206

Terry solid-wheel design permits large clearances

In the Terry solid-wheel turbine, the steam enters the buckets in a direction at right angles to the shaft, as shown above. This design eliminates the need for close clearances and provides positive blade protection.

The blades cannot foul. There is a one inch clearance on either side of the wheel. In addition, projecting rims on each side of the buckets prevent damage to the blades even though external thrust should move the wheel.

This is only one of the many advantages of Terry solid-wheel turbines. Write for complete details. Ask for a copy of bulletin S-116.

THE TERRY STEAM TURBINE CO.
TERRY SQUARE, HARTFORD 1, CONN.

CRISS CROSS

The Stronger, Longer Wearing, Better Lubricated Packing by **BELMONT**

A revolutionary braided construction, requiring special machinery—every strand in CRISS-CROSS Braid passes diagonally through the body of the packing, hence each strand becomes an integral part of the whole.

With CRISS-CROSS Braid, there is no outside layer to wear off, ravel, disintegrate.

This solid, integral braid is stronger, requires less gland adjustment. With its lubrication locked into the weave, it is more flexible and stays so.

For longer service life than any conventionally braided packing can offer—specify Belmont CRISS-CROSS.

Made in white and blue asbestos, TEFLON*-impregnated asbestos, and pure TEFLON.

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such leading Packing Distributors as:

Speck-Marshall Co. in Pittsburgh

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San Antonio Machine & Supply Co. in San Antonio, Waco, Corpus Christi

are ready to serve you promptly and helpfully, wherever you are.

Write for Catalog 56.

The Belmont Packing & Rubber Co.

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BELMONT

Fiss Named Director of Nuclear Power Association

Carolinas-Virginia Nuclear Power Associates has employed a full-time engineering director and stepped up its search for consulting engineers. **E. C. Fiss,** director of nuclear development for Duke Power Company, has been named engineering director of the four-company corporation.

The companies' top engineering officers were named as a permanent steering committee. First job assigned to them was the negotiation "immediately" of a contract with an engineering consulting firm capable of designing and erecting a power reactor.

Steering committeemen are **O. J. Miller,** executive vice president of Duke Power; **H. B. Robinson,** vice president and general manager of Carolina Power & Light Co.; **Miles Cary,** vice president of Virginia Electric and Power Co.; and **F. R. McMeekin,** vice president of South Carolina Electric and Gas Co.

The committee also was authorized to recommend a consulting nuclear scientist, if such services are deemed necessary.

Sylvania—Southeast

Paul P. Harrison of Decatur has been named southeast area sales manager in a new sales organization for fluorescent lighting fixtures announced by Garlan Morse, general sales manager of the Lighting Division of **Sylvania Electric Products Inc.**

Mr. Harrison, whose headquarters is Atlanta, is one of five area sales managers in the new sales group, which is separate from the company's existing lighting sales organization.

Vulcan Steel Container—Ala.

Fred A. Kusta has been named General Plant Manager and **John Carson,** Superintendent of **Vulcan Steel Container Co.,** Birmingham, Alabama, according to announcement made by Company President, **Gordon D. Zuck.**

Vulcan Steel Container Co. has recently completed building a new addition to its main plant in Birmingham, Alabama which increases its facilities by over 50%. Several new sizes and types of containers are being added to the line.

Now You Can Specify an Armco Pipe to

Meet any Sewer Requirement

For Highest Flow Capacity

Armco SMOOTH-FLO Sewer Pipe with a special bituminous lining that fills and covers the strength-giving corrugations. Provides a smooth, efficient interior.

For Corrosion Resistance

Various types of Armco Pipe provide the material durability you need. Plain galvanized for normal service, asphalt coated for added protection, and for the most severe corrosion service you can get the protection of Armco ASBESTOS-BONDED®. This has a layer of asbestos fibers embedded into the zinc coating and sealed with a special saturant.

For Erosion Resistance

Armco PAVED-INVERT® Pipe with a tough bituminous pavement in the lower quarter—where the wear is most severe. This provides balanced design for extra service life.

For Strength and Waterway Area

You can specify exactly what you need from the wide range of gages and sizes of Armco Corrugated Metal Pipe.

WRITE US FOR COMPLETE DATA

Armco Sewer Structures have been proved in severe industrial service

ARMCO DRAINAGE & METAL PRODUCTS, INC.

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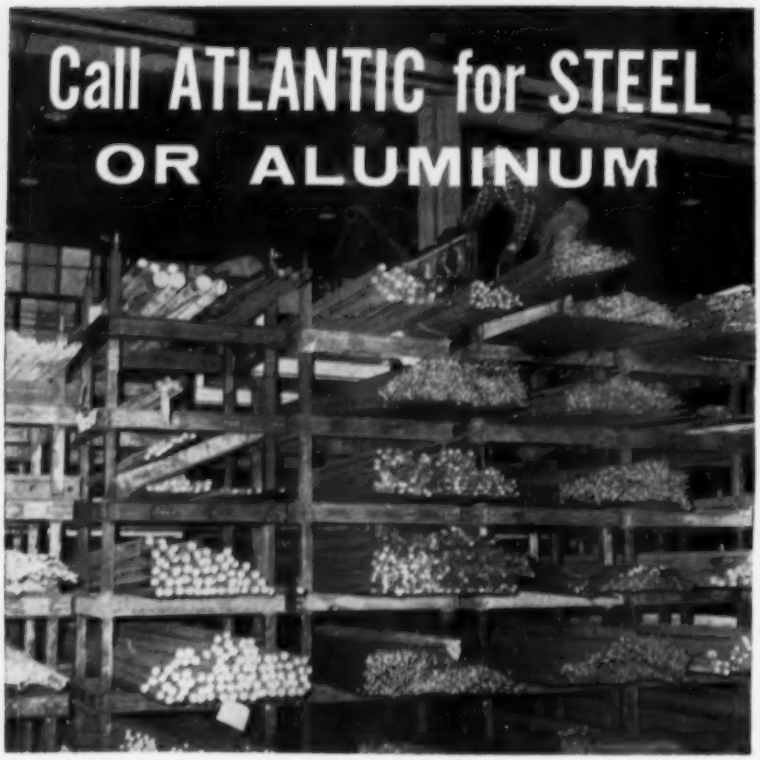

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Within reach of your telephone is a complete range of steel and aluminum warehouse products, ready for immediate shipment. No matter whether your order calls for pounds or tons, it will receive the same rapid processing that has earned an enviable reputation for Atlantic Steel's Warehouse Division. Thousands of firms, large and small, depend on this single source to meet their needs. Why don't you give us a try?

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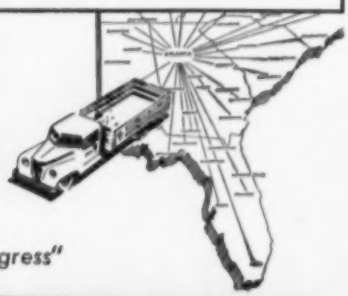

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AMERICAN STEEL WAREHOUSE ASSOCIATION — BETTER DISTRIBUTION

WAREHOUSE DIVISION
Atlantic Steel Company

14th at Northside Drive, P. O. Box 1714, Atlanta 1, Georgia

News (Continued)

Hilliard Representatives

The Hilliard Corporation, Elmira, N. Y. manufacturers of Hilco lubricating, fuel and industrial oil purifying equipment, filter cartridges and supplies, has announced the appointment of two new sales representatives.

Lynn McGuffy Company, 2330 Sul Ross, Houston, Texas, and 304 Sklar Building, Shreveport, Louisiana, will cover **East Texas, Southern Arkansas, Northern Mississippi** and **Northern Louisiana.**

C. Arthur Weaver Company, Inc., 403 East Franklin St., Richmond, **Virginia,** will cover that state.

G-E Controls—Virginia

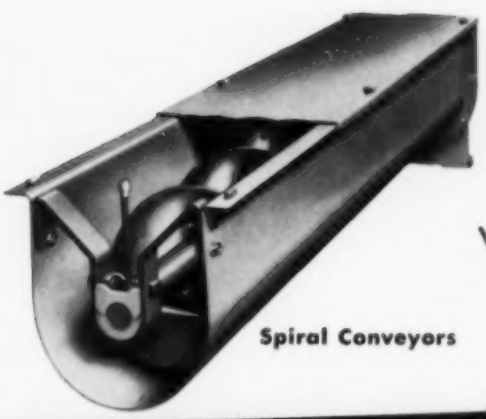
Appointment of **William Alvarez** as manager of engineering for the **General Electric Industry Control Department, Roanoke, Va.,** has been announced by Bertram W. Mahoney, department general manager.

Mr. Alvarez is a graduate of Rice Institute where he received a B.S. in electrical engineering. He joined General Electric in 1940 after earning an M.S. in electrical engineering from the University of Missouri.

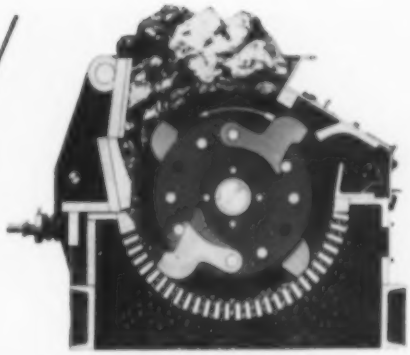
He completed the G-E Test Course in 1941 and, in August of that year, was assigned to the engineering section of the Control Division. In 1952 Mr. Alvarez was appointed manager of advance engineering in the newly-created Industry Control Department. Earlier this year he was named acting manager of engineering when H. W. Poole vacated that post to accept a position with the General Electric Marketing Services Division in New York.

Dan McConnell Forms Own Company in Carolinas

J. Dan McConnell, plant engineer at Cone Mills since 1947, has resigned and is now associated with his own company in the engineering-manufacturing field. He will also operate a consulting engineering service. An electrical engineering graduate of the University of North Carolina, Mr. McConnell joined Cone in 1933. He was turbine operator, assistant to the purchasing agent, and plant engineer.

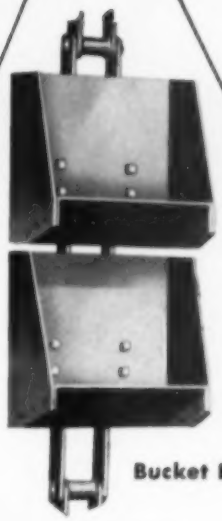


Spiral Conveyors



Flextooth Crushers

Scraper Conveyors



Bucket Elevators

Electric Vibrating Feeders

JEFFREY DEPENDABILITY counts most in equipping and operating a power plant

A high standard of design, materials and workmanship has made Jeffrey coal and ashes handling equipment the choice of leading power plant engineers. Whether you're planning a complete plant or revamping an old one, consider these Jeffrey products—

Spiral Conveyors for distributing coal to bunkers and hoppers are ideal where space is limited and capacity demands are not high. Coal can be discharged at any point by means of valves in trough bottoms. Available in various standard lengths.

Flextooth Crushers reduce lump coal to uniform sizes in a single operation, assuring maximum efficiency for mechanical stokers. An adjustable breaker plate permits making a wide range of sizes.

Electric Vibrating Feeders regulate flow to belts, elevators, pulverizers, weigh hoppers, etc., drawing feed from track hoppers and storage bins. Operate on the level, up or down grade. Impart no vibration to supporting structures. Capacities up to 600 tons per hour.

Bucket Elevators provide continuous handling of coal and ashes at low cost and require a minimum of space. Jeffrey furnishes elevators in various heights and in capacities of 25 to 40 tons per hour. Certain types can be employed for elevating and also for distributing coal to bunkers.

The Scraper Conveyor is one of the simplest of conveying units. Flights of various shapes, attached to either single or double strands of chain, drag the material in a steel trough. Operation may be horizontal or on an incline.

Detailed information on Jeffrey equipment for power plants is available upon request. The Jeffrey Manufacturing Company, Columbus 16, Ohio.

JEFFREY

CONVEYING • PROCESSING • MINING EQUIPMENT
TRANSMISSION MACHINERY • CONTRACT MANUFACTURING

For more information, use Reply Card — Page 89

THE AIR WE *Breathe...*

. . . . must be safeguarded against contamination. Every public-spirited industrialist realizes the importance of clean air to community good will, plant employee relations and the safety of his plant and its equipment.

Prat-Daniel has made notable contributions, during thirty years of research and manufacture, to the dust and smoke abatement programs across the nation. By promoting good public relations and protecting sensitive machinery, P-D Collectors have performed an outstanding service.

One of the many developments that have contributed to this success is an exclusive, patented, unique design of internal gas flow, known as *PLENAFLO. This feature eliminates recirculation, reduces wear, provides accessibility to every tube and improves efficiency.

The Thermix Corporation, Project Engineers, will be glad to send you a bulletin fully explaining this new idea in tubular design. Ask for Bulletin on P-D dust collectors featuring PLENAFLO.

*Trademark

pd

Project Engineers

THE THERMIX CORPORATION

GREENWICH, CONN.

(Offices in 38 Principal Cities)

Canadian Affiliates: T. C. CHOWN, LTD., Montreal 25, Que.

Designers and Manufacturers

PRAT-DANIEL CORPORATION

SOUTH NORWALK, CONN.

POWER DIVISION: Tubular Dust Collectors, Forced Draft Fans, Air Preheaters, Induced Draft Fans, Fan Stacks

Continental Gin to Expand All of Company's Facilities

Continental Gin Company, Birmingham, Alabama, has inaugurated a multi-million dollar expansion program to broaden its diversification and provide additional facilities for a growing volume of business, according to Eugene H. Brooks, Executive Vice President.

The broad program, which will require several years to complete, encompasses improvements to all of the company's facilities in **Birmingham, Dallas, Prattville, Atlanta** and **Memphis.** Major capital expenditures will be made at the company's plant in Birmingham which eventually will be utilized by the company's Industrial division. It produces both materials handling equipment under the Continental name and many types of custom-made machinery, machine tools and other high quality precision machinery for industry in general.

Scheduled for immediate construction at Birmingham is a new three-story wing addition to the general office building with 15,325 sq ft of floor space. It will be similar in design and construction to the existing structure and will house additional engineering and office personnel.

Other improvements planned for the Birmingham property include: installation in the machine shop of new grinders, boring mills, horizontal boring bars and many special tools to expand production capacity.

Fabricating shop enlargements and improvements, including extension of heavy crane runways, building additions and new presses and tools to supplement existing facilities.

Improvements in the company's other plants will embrace substantial additions to office space and facilities at the Dallas and Memphis properties, and construction of and equipment for several new buildings for the manufacture and warehousing of gin machinery at Prattville, Ala. Construction work on the latter has already commenced.

Southwest Fabricating Co.

Ardon B. Judd has been elected president of **Southwest Fabricating & Welding Company** of Houston, Texas, a subsidiary of Walworth Company, a leading manufacturer of valves and fittings.

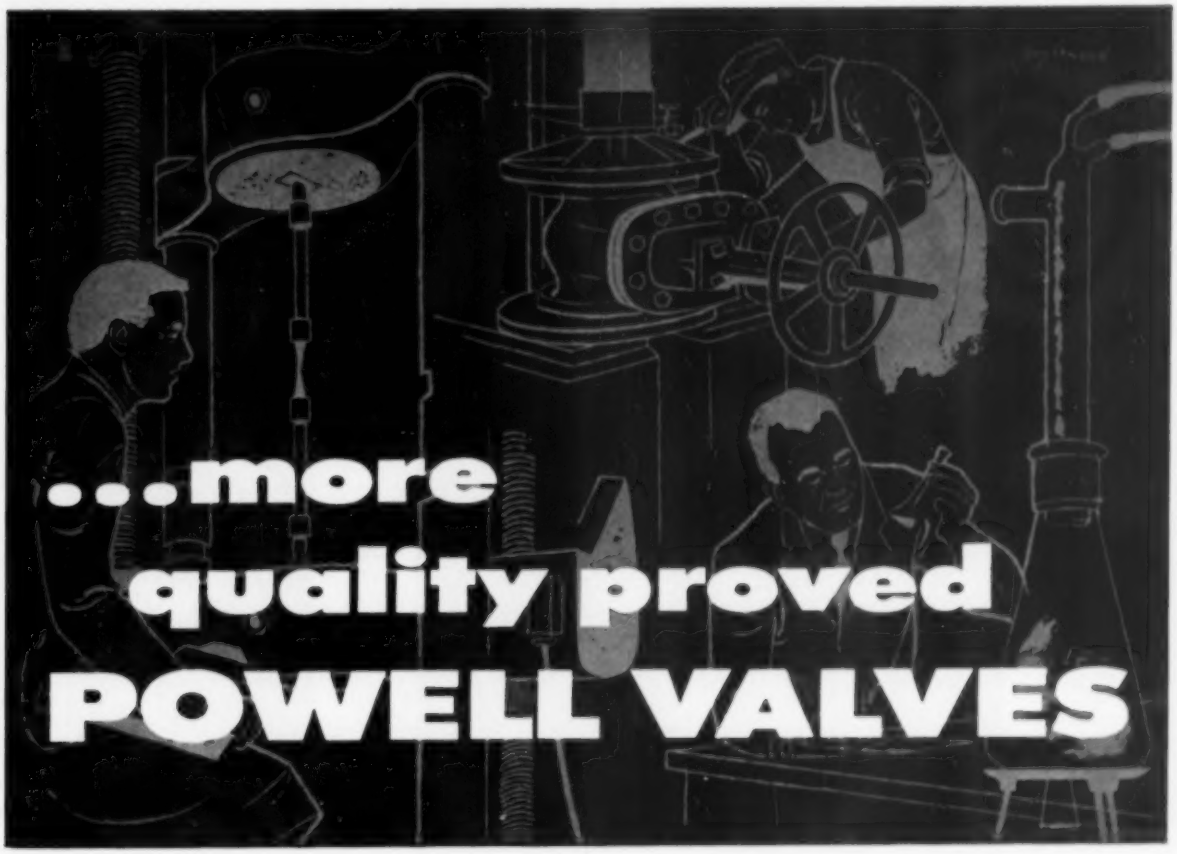
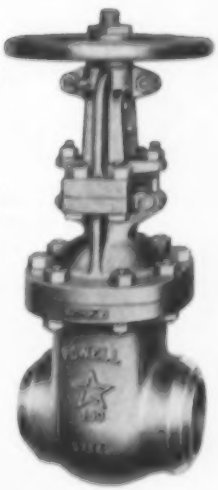


FIG. 19003 W.E.—Steel Pressure Seal Gate Valve for 900 Pounds. Also available for 600, 1500 and 2500 Pounds.

FIG. 3061 W.E.—300-Pound Steel Swing Check Valve.

FIG. 1503 W.E.—150-Pound Steel O.S. & Y. Gate Valve.

FIG. 11365 W.E.—Steel Pressure Seal Horizontal Lift Valve for 1500 Pounds. 900-Pound Valves also available.

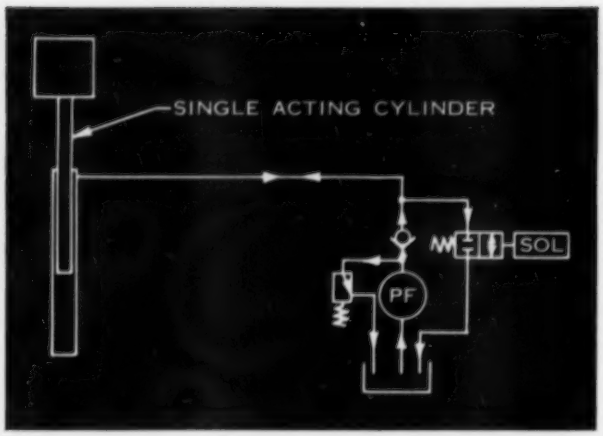


for dependable flow control

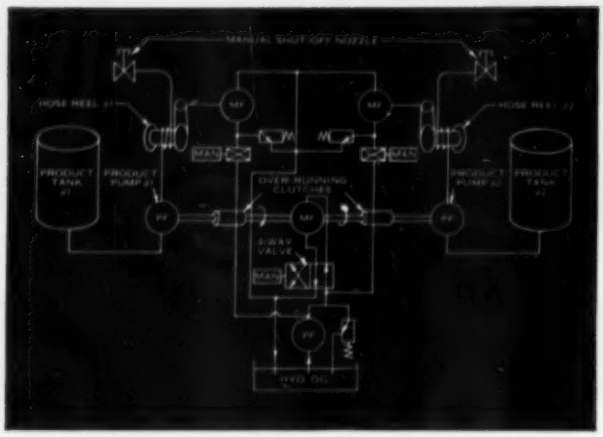
Consult your Powell Valve distributor for full facts about quality proved bronze, iron, steel and corrosion-resistant valves. For every flow control problem—there is a Powell Valve to solve it.

THE WM. POWELL COMPANY, CINCINNATI 22, OHIO . . . 111th YEAR

SIMPLE CIRCUIT



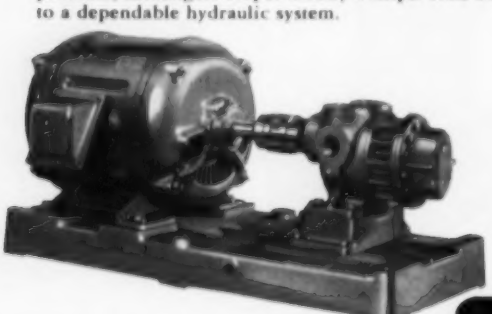
COMPLEX CIRCUIT



ROPER

Serves Both Best

The key to any hydraulic system is the pump. It must have the proper characteristics in relation to the other equipment in the circuit — whether simple or complex. It must also be *dependable* and have the *stamina* to provide long and trouble-free service. Roper Rotary Pumps *have* the attributes that are so necessary to effect optimum performance, and you can count on them for successful control of circuits involving either tons or pounds. On your next hydraulic problem, investigate Roper Rotary Pumps. Find out how they can be the key to a dependable hydraulic system.



PUMPS TO 1000 P.S.I.

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HYDRAULIC PUMP-MOTORS

High Torque Low Speed
Up to 11.5 H.P. output

SEND FOR CATALOG 957 AND SPECIAL BULLETIN 22

GEO. D. ROPER CORPORATION
434 Blackhawk Park Avenue
Rockford, Illinois

ROPER Rotary Pumps

News (Continued)

Calise Gen. Sls. Mgr. of Graver Water Cond.

Graver Water Conditioning Co., manufacturers of industrial and municipal water treatment and industrial waste treatment equipment has announced the appointment of **Vincent J. Calise** as General Sales Manager. Mr. Calise has spent more than 17 years dealing with all aspects of business in these fields.

He has pioneered in many developments and applications in the water treatment field. These developments include the use of demineralization (an ion exchange process) for power plant and process water treatment, hot process treatment, deaerating heater designs and use in the power plant cycle, clarification and softening of hard and turbid water supplies and the application of ion exchange to plating and waste problems.

Link Belt—D. C. & Md.

Link-Belt Company has announced the following changes in its district office sales organization:

C. C. Wiley has been appointed **Washington** district manager. For the past six years Mr. Wiley has been district manager at Baltimore. He started with Link-Belt in 1926 at the Philadelphia plant and served in the Pittsburgh office for 17 years prior to appointment in 1946 as district manager at Birmingham, Ala.

Paul Waldorf has been appointed **Baltimore** district manager. For the past 11 years Mr. Waldorf has been a sales engineer in the Detroit office. He joined the company in 1929 and has served in Indianapolis, St. Louis, Pittsburgh, Chicago and Cleveland.

EUTECTIC Welding News

Low Temperature EUTECTIC WELDING ALLOYS

PLANT, RESEARCH LABORATORIES and WORLD HEADQUARTERS

Published by EUTECTIC WELDING ALLOYS CORPORATION 40-40 172nd STREET, FLUSHING 58, NEW YORK, N. Y.

"EUTECTIC" WELDING HEADLINES • TIME • MONEY • MACHINERY SAVERS

AUTHORITY ON WELDING, DR. G. M. A. BLANC TO LECTURE IN THE UNITED STATES IN APRIL

Rene D. Wasserman, President of Eutectic Welding Alloys Corporation, has announced that Dr. of Engineering G. M. A. Blanc, in charge of research activities of Castolin, European affiliate of the international "Eutectic" organization, will visit the United States in April. Dr. Blanc, who received the doctorate in electrical engineering from the Swiss Polytechnic Institute in Zurich, is head of the Brazing Committee of the International Institute of Welding, and a popular lecturer at European universities interested in welding research.

During his visit here, Dr. Blanc will lecture at Massachusetts Institute of Technology and other American and Canadian colleges and universities. He will also hold consultations with leading research and welding specialists of American industries.

Dr. Blanc will speak on the following subjects of major importance to welding and research specialists: "The Experimental Determination of Bonding Temperatures"; "Production Brazing"; and "Fundamentals and Applications of Low Heat Joining of Metals."

To all who are interested in the latest welding research developments, Dr. Blanc's talks should prove stimulating and useful. Reprints are available free on request from Eutectic's Technical Information Service. *(A-61)*

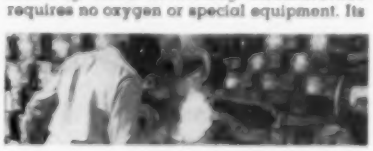
9 TON SHAFT OVERLAYED BY EUTECROD 185 IN 8 HOURS

The bearing end of this nine ton, 23-foot stoker drive shaft was badly worn by 21 years of operation. An eastern utility company thought repair would be lengthy and expensive until Eutectic's District Engineer suggested EutecRod 185, patented BronzoChrom overlay with highest resistance to frictional wear. EutecRod 185 repaired the shaft in eight hours, with great savings in materials and labor.

Overlays were applied without raising the shaft above cherry red in color: EutecRod 185 bonded without fusion of base metal at temperatures between 1000° and 1200° F. Harder and tougher than conventional bronze overlays, EutecRod 185 overlays have high ductility, low coefficient of friction, and excellent corrosion resistance, now give shaft excellent resistance to wear and impact. *(A-62)*

EUTEC-CHAMFERTRODE SPEEDS CUTTING AND CLEANING TIME

A Texas oil refinery dis-assembling worn catalysp chains before rebuilding them tried a number of conventional cutting methods without achieving clean, fast cutting. Eutectic's District Engineer recommended Eutec-ChamferTrode, high speed gouging electrode for all metals. Fast, clean cutting action of ChamferTrode resulted in faster dis-assembling, easier re-welding. ChamferTrode requires no oxygen or special equipment. Its



exothermic coating concentrates the force of the arc right at the point of application, yielding a highly efficient metal removing tool. *(A-63)*

In answering industry's requests for technical data, Eutectic's research and engineering staffs help industry save thousands of dollars each year. Your question, like those below, will be answered without obligation by Eutectic's Technical Information Service.

Q. We have found Eutec-TinWeld ideal for manufacturing several of our products. For large scale production, what method would you recommend for applying TinWeld to the parts to be welded?

A. We suggest you test these two methods to see which best suits your needs. After thinning, Eutec-TinWeld can be applied by using mechanical rollers to transfer automatically the paste from the hopper. A constant uniform supply can be produced with a series of three rollers, one transferring to the other. The second method is to use a pump ejection system. Fill a cylinder with Eutec-TinWeld and force it through an opening with a piston. By using compressed air, this method can be used to dispense the paste from an overhead hopper, as well as spraying it through an atomizer.

Q. We are a large newsprint and paper manufacturer and require a great deal of hard overlaying of chipper bed knives. What EutecTrode do you recommend for this application that will provide exceptional edge retention qualities?

A. EutecTrode 6-HSS is ideal for your needs. Its special "Frigid Arc" coating permits welding at lowest possible amperage, with minimum dilution and great freedom from porosity. It produces a hardness of RC 62.

Eutectic Warehouse—Service Centers
446 Northside Drive, N. W., Atlanta 18, Ga.
2204 Irving Boulevard, Dallas 7, Texas

Eutectic Welding Alloys Corporation
40-40 172nd Street, Flushing 58, N.Y.

Gentlemen:

I would like further free information on the following:

☐ A-61 ☐ A-62 ☐ A-63

☐ Free 170 page pocket Welding Data Book.

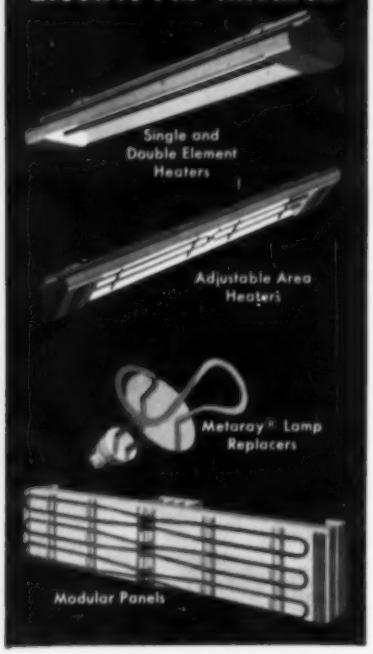
Name_____

Business Address_____

City_____ State_____

EUTECTIC WAREHOUSE—SERVICE CENTER • 446 NORTHSIDE DRIVE, N.W., ATLANTA 18, GA.
EUTECTIC WAREHOUSE—SERVICE CENTER • 2204 IRVING BOULEVARD, DALLAS 7, TEXAS

FAST uniform heating
...dialed to your exact need
CHROMALOX
Electric Far-Infrared



Isn't this the heat you need?

Fast . . . up to 75% faster than convection

Uniform . . . no over- or under-curing

Color-blind . . . absorbed almost equally by all colors

Clean—safe . . . no fumes, no flames, no glare

Accurately controlled . . . with infinite number of settings to match different jobs

Unbreakable, all-metal, maintenance-free

Easy and economical to put on the job

Chromalox Electric Far-Infrared is the answer

FREE BULLETINS for each type heater. Tell us your needs and we'll give you specific recommendations. Write today.

Edwin L. Wiegand Company

7563 Thomas Boulevard, Pittsburgh 8, Pennsylvania

C-5107A

C & D Batteries—Miss.

Clayton J. Roderick expands the sales staff of **C & D Batteries, Inc.,** in the **Jackson, Miss., area.** He is associated with **Gregory-Salisbury & Co., Inc.,** as a sales engineer.

Before joining C & D's sales force, Roderick was employed by the N. O. Nelson Co., handling industrial sales of motor controls, transformers, motors, and general plumbing and industrial equipment.

From 1943 until 1946, Heinmiller was instruction book writer on General Electric turbosuperchargers and jet engines at the River Works, Lynn, Mass.

In 1946, he served in the company's News Bureau at Schenectady and from 1946 to 1950 was advertising account supervisor in the Advertising and Sales Promotion Department at Schenectady.

During 1950 and 1951, Heinmiller toured the United States as publicist for General Electric's "More Power to America" exhibit train, joining the *Review* after that assignment.

He is a member of the American Society of Mechanical Engineers, Association of Technical Writers and Editors, and National Association of Science Writers.

Parker Distributor—Fla.

A new firm, **Industrial Piping Supply, Inc.,** of **Pensacola, Florida,** temporarily located in the Thiesen Building on Palafox Street (P. O. Box 1772) has been formed to become a distributor of **Parker Appliance Company** tube and hose fittings and related piping materials.

The new organization is affiliated with similar concerns in Charlotte, North Carolina and Bessemer, Alabama. Technical assistance on tubing systems will be extended as needed to the new firm by **L. C. Ely,** Parker district manager for the Southeast.

Air Reduction — Louisville

H. C. Wallace, district manager of Air Reduction's **Louisville, Ky.,** sales office has been appointed assistant regional sales manager of the Southern Region with his headquarters remaining in Louisville, Ky. **A. C. Pease,** assistant sales manager, Louisville, succeeds Mr. Wallace as district manager.

That's right sir, Southern Water Conditioning is the largest in the South . . . Serving just the South to assure better and faster service. Top personnel with more than 32 years experience in the field.

WHAT SOWACO OFFERS YOU!

★ **Zeolite Water Softeners**
Standard greensand, hi capacity greensand, synthetic gel, sulfonated coal, resin polystyrene, sodium and hydrogen ion exchangers, hot process

★ **Filters and Purifiers**
Sand — anthrafilt — quartz — activated carbon — taste and odor removal — condensate oil removal

★ **Modernized and Rebuilt Water Softeners**
Increased capacities of older units as much as 300% (depending on type of zeolite) standard valve nests — multiport valves — semi automatic and fully automatic

★ **Aerators and Degasitors**
Coke tray — slat tray — forced draft — induced draft for removal of iron — manganese — taste and odor — hydrogen sulphide — methane

★ **Process and Boiler Water Conditioning**
De-mineralizers — post treatments — zeolite — alkalinity neutralizers — split stream system — chemical treatment feeders. Misc. chemical treatments. Your inquiry survey made by competent personnel. Service after installation, periodic calls

★ **Domestic Softeners—all types**
Swimming pool filters, complete package units, Zeolite in stock, for immediate shipment

FREE: *Write today for illustrated literature and detailed information*

Southern Water Conditioning, Inc.
St. Petersburg, Fla.

Southern Water Conditioning, Inc.,
315 15th Avenue So., St. Petersburg, Fla.

Suh!

☐ As one Southern gentleman to another Southern gentleman, I would like to receive your illustrated brochures.

☐ I would like detailed information on _____

Name _____

Company Name _____

Address _____

City _____ State _____

More News

Chromalox—Atlanta

The Edwin L. Wiegand Company, manufacturers of electric heating equipment, is now represented in the Atlanta area by **Applebee-Church, Inc.,** with headquarters at 1389 Peachtree St., N.E.

Charles F. Applebee was for eight years a member of the firm of C. B. Rogers and Associates, Atlanta, former Chromalox sales-engineering representatives.

Walter B. Church began his career with Chromalox as an application engineer at Pittsburgh headquarters in 1946 and since 1948 was associated with Paul V. Renoff Company, Chromalox Baltimore representatives.

Cash Standard—Missouri

A. W. Cash Company, Decatur, Ill., and its subsidiary, **Cash Standard Stacon Corporation** have announced the appointment of the **K. C. Brown Company** of Kansas City, Mo., as their representative in **Kansas** and **Western Missouri.**

The new representative, with offices at 4010 Washington Ave., Kansas City 11, Mo., will be sales agents for the Cash Standard and Cash Standard Stacon lines of pressure, temperature, hydraulic, process and combustion controls.

Westinghouse — Baltimore

A new division of the **Westinghouse Electric Corporation** — the X-ray and industrial electronics division — represents a merger of the X-ray division and the industrial electronics department, both of which have been located in **Baltimore, Md.**

W. J. Delaney, Jr., formerly manager of the welding department, motor and control division, Buffalo, N. Y., will head the X-ray and industrial electronics division. **H. D. Moreland** and **R. C. Cheek** will continue as managers of the X-ray and industrial electronics operations respectively.

The purpose of the move is to utilize more fully available space at the Wilkens Avenue plant where the X-ray operation has been located since 1941.

CORROSION

TYPE	HOW TO IDENTIFY
GALVANIC	Localized deep grooves or pits, often at contact between dissimilar metals.
UNIFORM	Uniform attack—may be on only one part.
INTERGRANULAR	Attack at grain boundaries.
PITTING	Rapid, deep pitting at several small areas. May be uniform or highly localized.

Why you can conquer all four kinds of corrosion with Goulds chemical pumps

When you buy Goulds Fig. 3715 chemical pumps you can build *specific* protection against all four types of corrosion.

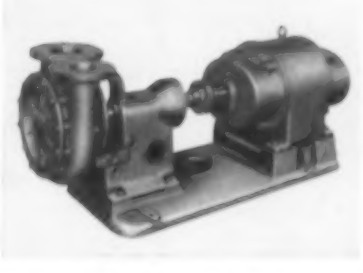
Match the pump metal to your liquids. You can have the *entire* fluid end of the pump made of 316 stainless, Gould-A-Loy 20, nickel aluminum bronze, iron, iron with stainless trim or nickel aluminum bronze trim. These metals from stock. Any machinable alloy on application.

All machined parts in all metals held to same close clearances permitting economical alloy changes in the field . . . the entire liquid end or any component as conditions warrant.

Choosing from this wide range of metals, you can combat the different corrosive actions of hot acids, alkalies, slurries, sizes, or whatever other corrosive liquids you pump.

Match pump size to job

You can get Goulds Fig. 3715 in 9 sizes: capacities to 720 GPM, heads to 200 ft. Other features of Fig. 3715: water-jacketed support head permits handling liquids at 350°F.; impeller clearance can be adjusted without dismantling the pump. For more information, write for Bulletin 720.4.



These larger pumps also fight corrosion

For larger capacities or heads, you can get these other Goulds pumps in metals that resist specific corrosion:

Fig. 3405—single stage, double suction; 19 sizes; capacity to 6400 GPM, head to 425 ft. Bulletin 721.6. Popular sizes available in 316 stainless steel from stock.

Fig. 3305—two stage, opposed impellers; 8 sizes; capacity to 1200 GPM, head to 1000 ft. Bulletin 722.6.

Fig. 3189—single stage, open impeller; 11 sizes; capacity to 1080 GPM, head to 180 ft. Bulletin 720.4.

Goulds PUMPS INC. Seneca Falls New York

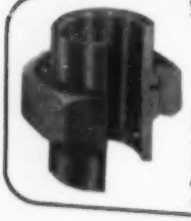
Branches: Atlanta • Boston Chicago • Houston New York • Philadelphia Pittsburgh • Tulsa

West Coast Representative: Goulds Pumps Western, Portland, Ore.
In Canada: The A. R. Williams Machinery Co., Ltd. in all principal cities.

Catawissa
PERFECT SEAL
Unions

HOT FORGED from solid, rectangular steel bars, designed and produced for dependable, long-life service under the severest piping conditions!

A TYPE FOR EVERY USE!
FOR ALL PRESSURES!
FOR ALL TEMPERATURES!

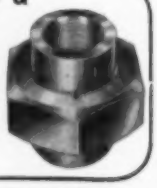


Standard & Double Extra Heavy
UNIONS
Available with screwed or socket weld ends. 3000-lb. sizes ⅛" to 3"; 6000-lb. sizes ⅛" to 2".

ORIFICE UNIONS
With screwed or socket weld ends. 3000-lb. and 6000-lb. service.

MALE & FEMALE UNIONS
With steel-to-steel, bronze-to-steel, stainless steel-to-steel or orifice seats. 3000-lb. service only.

FULL STAINLESS & FULL ALLOY STEEL UNIONS
With screwed or socket weld ends. 3000-lb. and 8000-lb. service.



WRITE FOR CATALOG 56
Showing the Complete Catawissa line of Perfect Seal Products
CATAWISSA VALVE & FITTINGS COMPANY
950 MILL ST., CATAWISSA, PA.

News for the South (Continued)

Chemstrand—Decatur, Ala.

Chemstrand Corporation President Edward A. O'Neal, Jr., has announced the appointment of **James P. Vandervort** as assistant to the president.

Vandervort, who has been in charge of Chemstrand's management development program since he joined the chemical textile fiber firm in January, succeeds Cloyce L. Purdom whose appointment as Chemstrand market research manager for the general sales division was announced earlier.

Before coming with Chemstrand, Vandervort was training supervisor for the U. S. Defense Corporation at St. Louis.

G-E — Constr. Mtls. Div.

New district representatives have been appointed to the Sales Department of **General Electric's Construction Materials Division.**

L. Amador Flynt, who is assigned to the **Southeastern District,** will handle Wiring Devices. His office will be at 3005 North B Street, Tampa, Florida.

David F. Korb will be in the **Mid States District** with offices at 3620 Lexington Road, Louisville 7, Ky. He will handle Wiring Devices.

DeWayne McCauley has been appointed to handle Wiring Devices, Wire and Cable, and Conduit Products for the **Southeastern District.** His office will be at 1300 Berryhill, Charlotte 1, North Carolina.

Walter J. McCleese, who is assigned to the **Atlantic District,** will handle Wiring Devices. He will be located at 1027 Oliver Building, Mellon Square, Pittsburgh 22, Pennsylvania.

Allan B. Thomas has been designated to handle Wiring Devices, Wire and Cable, and Conduit Products for the **Southwestern District,** with offices at Witeside Building, Room 211, 18th Street and Avenue K, Lubbock, Texas.

Mexico Refractories — Ala.

Robert D. McWhorter is now Birmingham, Alabama, sales representative for **Mexico Refractories Company** of Mexico, Missouri.

Parker Appliance—Okla. City

Appointment of **Industrial Gasket & Packing Co., Inc.,** 801 South Walker Street, **Oklahoma City,** Oklahoma, as distributor of Parker o-rings and other molded rubber products has been announced.

President of the distributing firm is **Charles J. Donavan.** Technical assistance on o-ring sealing will be extended to the firm as needed by **K. R. Detrich,** Parker district manager for the midwestern area which includes Oklahoma.

W. J. McAlpin Honored

W. J. McAlpin, president of **J. J. Finnigan Company** of Atlanta, Georgia, has been elected to the Board of Directors of the **Steel Plate Fabricators Association** for a three year term. This association is comprised of the leading steel fabricators, and its members fabricate 80% of all the steel plate tonnage in the United States.

Mr. McAlpin has been with the Finnigan Company for thirty years. He has served as sales engineer, vice president and for the past twenty-three years in his present capacity of president.

J. J. Finnigan Co. is one of the South's leading fabricators of tanks, smokestacks, piping, breeching, plate work, boilers, etc. Sales offices are maintained in Houston, Dallas, Jacksonville, Little Rock, Washington, New Orleans, Charlotte and New York City.

Carboloy — N. C.

Remco Supply Inc., Greensboro, N. C., was recently appointed an authorized Carboloy carbide tool distributor by **General Electric's Metallurgical Products Department,** Detroit.

The appointment places the organization in position to supply industries in the Winston-Salem, Greensboro, Durham and Raleigh areas with standard and special cemented carbide metal-cutting tools, as well as masonry drills and diamond grinding wheel dressers marketed under the Carboloy brand name.

Amoco — Virginia

The Fluor Corporation, Ltd., Los Angeles engineering - construction firm, has announced that it will begin construction this summer on a gas treating and sulfur recovery plant at the American Oil Company's **Yorktown, Va.** refinery.

The facility, which is the second addition by American Oil to the original plans for the $35,000,000 refinery, is designed to remove about 50 tons of sulfur per day. This will be accomplished by treating refinery gases which are composed mostly of hydrocarbons and sulfur compounds.

The sulfur emerges as a liquid and is kept heated and liquified until it can be pumped into tank cars and shipped. The hydrocarbon gases from which the sulfur is removed are piped back into the refinery and burned to provide heat for other refinery purposes.

Philip Sporn Plant — W. Va.

Contract for general construction work on installation of a new 450,000 kw generating unit at the Philip Sporn Plant, **Graham Station, W. Va.,** has been awarded to the Sollitt Construction Company of South Bend, Ind. Construction of the building to house the unit is scheduled to begin this month, with operation scheduled for late 1959. The 450,000 kw unit is 73% larger than any other generating unit operating today.

Wheelco Instruments

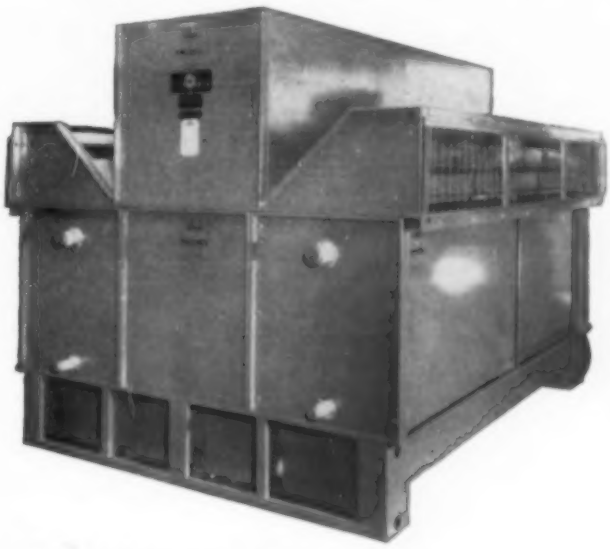
H. H. Kieckhefer, Sales Manager of the **Wheelco Instruments Division, Barber-Colman Company,** has announced the expansion of sales and service facilities in the **Atlanta, Philadelphia, Pittsburgh,** and **St. Louis** areas.

Harold Dirkers, formerly of the Detroit Wheelco Branch, is the new Branch Manager of the St. Louis office.

Louis D. Gercken has joined the Atlanta sales engineering staff.

The Philadelphia office has added **Joseph S. McDonnel** and **John M. Schneider** as service engineers, and **Henry L. Byrne** as a sales engineer.

A new service engineer with the Wheelco Pittsburgh office is **William C. England,** and **Kenneth J. Munhall** has joined the Pittsburgh office as a sales engineer.



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***Aero* HEAT EXCHANGER**
gives close temperature control, saves you ***LABOR,*** *Power, Water*

- **Because the new design improves the heat transfer to the out-door air by evaporation.**
- **Because new features keep your equipment working for long life with "new plant" efficiency...always full capacity.**
- **Because you save 95% of cooling water cost.**

You get faster, more accurate cooling of industrial fluids to specified temperatures.

You improve your quality of production by removing heat at the rate of input.

You save labor in upkeep. With full access to all interior parts and piping you see everything in easy inspections. You head off dirt accumulation and corrosion. Casing panels are removable without moving the coils. The coils can be cleaned from both sides.

First cost is low; freight is low because of the lowest space/weight ratio; you save much labor in erection. Capacity range is 7,000,000 to 18,000,000 Btu/hr. No other heat exchange method gives you so much saving in money and convenience.

Write for Niagara Bulletin 132. Ask for the full story of how you can save expense in your plant and improve your product's quality.

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NIAGARA — *Over 40 Years' Service in Industrial Air Engineering*

LUBRIPLATE No. 630-AA LUBRICATES ABOUT EVERYTHING

LUBRIPLATE No. 630-AA is practically a universal grease type lubricant. It was developed to meet industries' need for *"simplified lubrication"* . . . one lubricant to effectively satisfy a great number of requirements. LUBRIPLATE No. 630-AA has a smooth, stable consistency, a wide temperature range, possesses high film strength, fine adhesive properties and is water repellent. It satisfies most lubrication requirements, thus eliminates the need for a different lubricant for each application in many cases.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.

News for the South (Continued)

American Enka — Tenn.

The new multi-million dollar rayon staple fiber plant of **American Enka Corporation** is in operation at **Lowland, Tenn.**

Capacity of new plant will be more than 50,000,000 pounds of staple fiber annually. Experimental spinning has been in process since the latter part of December. Commercial production will be increased by stages until summer, when the plant is scheduled for full operation.

American Enka's entry into the rayon staple field has broadened the company's base for increased service to the textile industry. The fiber will be produced for apparel, home furnishings, carpets, industrial fabrics, and other end uses.

Claude Ramsey, Jr. is staple fiber production manager. **Jan Heykoop** and **J. D. W. Hubbeling** continue as plant manager and chief chemist, respectively, of the enlarged operation.

Rockwell Mfg. — Atlanta

Herbert Parker, sales engineer in the **Atlanta, Georgia,** district office of **Rockwell Manufacturing Company's Meter and Valve Division** since 1950, has been promoted to Atlanta district manager, J. H. Walters, Southern regional manager, has announced.

A native of Houston, Texas, Mr. Parker joined Rockwell in January, 1937, in the Houston district office. He became a sales engineer in the Houston area in 1940 and later served as a sales engineer attached to the Tulsa, Oklahoma, district office (1945-47).

Chester Beard Now With General Controls — Calif.

Chester S. Beard has joined the Control Valves and Actuators Engineering Division of **General Controls Co., Glendale, Calif.** He returns to the West Coast after six and a half years service with Foster Engineering Company as research and development engineer and with Ebasco Services in New York as instrument consultant.

Zirconium Plant — Fla.

N.R.C. Metals Corporation's zirconium and hafnium plant in Santa Rosa County, near **Pensacola, Florida,** is scheduled for production toward the end of 1957. It is the country's first fully-integrated facility for the production of the high-purity metals available in sponge form for melters and fabricators. The zircon sand to be used as a raw material is available from ore beds also located in Florida.

The National Research Corporation and Columbia-Southern Chemical Corporation have recently become associated as equal stockholders in N.R.C. Metals Corporation, formerly a wholly-owned subsidiary of National Research Corporation.

Ft. Worth Steel — Texas

Fort Worth Steel & Machinery Company has appointed **Russell H. Smith** as supervisor of the customer-service section of its sales department headquarters in **Fort Worth.** Smith has moved from Chicago, where he was district sales manager for FWS&M for the past five years.

TCI — Welded Wire Mesh

Facilities for the production of welded wire mesh are being installed at **United States Steel's Tennessee Coal & Iron Division** at **Fairfield, Ala.**

Equipment being installed includes two 156-inch fabric welding machines, together with auxiliary equipment. Housing for production facilities and storage will be provided at the division's Fairfield Wire Works.

Of the electric welding type, the machines will have a combined annual capacity of almost 18,000 tons. They will furnish wire mesh for such construction uses as various forms of concrete construction, including highway paving, airport runways, buildings, pipe and the like. The fabric will be produced in various widths, in cut-to-length sheets or coils.

These facilities are expected to be placed in operation during the third quarter of this year.

R-P&C Valves — Atlanta

Several changes in the sales executive staff of the **R-P&C Valve Division, American Chain & Cable Company, Inc., Reading, Pa.,** have been announced by Mr. Charles L. Haslup, Sales Manager.

John W. Swanagon, formerly district manager for the Atlanta, Ga. district, has been transferred to **Philadelphia** as district manager.

Replacing Mr. Swanagon as district sales manager for the **Atlanta** district will be **George Legan,** who for the past 4 years was a territory salesman in the Alabama, Tennessee and Mississippi markets. He will make his new headquarters at 1055 West Marietta Street, N.W., Atlanta, Ga.

Sea Water Lab — N. C.

A recent announcement by K. B. Ris, President of the **Griscom-Russell Company,** Massillon, Ohio, has revealed that G-R has established a new Marine Testing Laboratory. The laboratory, located at the **Harbor Island, North Carolina,** station of the International Nickel Co. is presently in operation under the supervision of S. F. Mulford, a specialist on water distillation problems.

Purpose of the new facility, according to officials of G-R, a subsidiary of General Precision Equipment Corporation, is to obtain accurate and complete data on heat transfer and evaporator equipment and materials under actual seawater use conditions.

L. F. Barnett Joins Atlanta's Lewis M. Crowe Company

L. F. (Bill) Barnett has joined the **Lewis M. Crowe Company** as a sales engineer according to a recent announcement by Lewis M. Crowe, Jr., principal of the organization. The Lewis M. Crowe Company is the exclusive sales agency for **Conoflow Corporation** in **Georgia** and **Eastern Tennessee.**

Mr. Barnett's association with the Lewis M. Crowe Company will greatly facilitate the servicing of Conoflow's many accounts in the area. He will work out of the company's sales office situated at 1930 Wellbourne Avenue, Atlanta, Georgia.

ONE COAT OF SUBOX PROTECTS GALVANIZED TOWERS FOR 5 TO 8 YEARS

Indeed, a coat of Subox paint often lasts more than eight years . . . and usually without any chipping, cracking, peeling or blistering.

Subox paints are the only American paints made with lead-suboxide. A colloidal pigment, it assures maximum surface penetration . . . packs to form a dense, impervious coating. Furthermore, being *chemically active,* lead-suboxide *actually works* to strengthen and reinforce the film.

Subox paints have been proved under the severest conditions and are used more widely than any other paints for the protection of galvanized towers. Available in attractive modern colors.

Write for brochure: "Corrosion Control of Electrical Structures and Equipment."

SUBOX PAINTS

Subox Inc.

Established 1924
6 Fairmount Plant
Hackensack, N. J.

Save on Your
INDUSTRIAL
TRACK

FULLY
GUARANTEED

FOSTER
QUALITY
RELAYING
RAILS

Lower installation and maintenance costs—handle more cars better. Foster nationwide warehouses also stock every New Rail Section 12# through 175#, Switch Material and Accessories to meet your specific job requirements.

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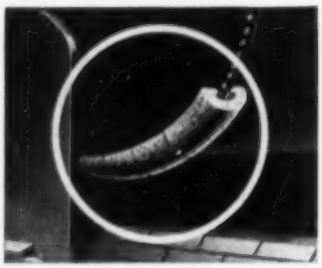
RAILS · TRACK EQUIPMENT · PIPE · PILING
L.B. FOSTER CO.
PITTSBURGH 30 • NEW YORK 7 • CHICAGO 4
ATLANTA 8 • HOUSTON 2 • LOS ANGELES 5

One leak leads to another unless the seam is protected



If the seam of a riveted HRT boiler continues to be exposed to the same conditions, leaks are bound to recur. So the first leak is a warning against repeated leaking and calking.

The trouble and expense can be avoided by insulating the seam with a National Boiler Protector. This has been proved in thousands of cases over the last 40 years.

The relative costs of insulation and repair are suggested by the adage, "An *ounce* of prevention is worth a *pound* of cure."

Ask for our interesting literature.

NATIONAL BOILER PROTECTOR CO.
928 Reibold Bldg., Dayton 2, Ohio

News for the South (Continued)

Henry Heuser President of Vogt Company — Louisville

Henry V. Heuser has been elected president of the **Henry Vogt Machine Co.**, in **Louisville, Ky.**, succeeding his father, G. A. Heuser, who has become chairman of the board.

The new president of the Vogt Company is a graduate chemical engineer (Purdue University, 1936) and has worked in every department of the Vogt organization during the past 20 years. He has for several years been executive vice president, in which position he also was sales director.

Vogt Company principal products include forged steel valves and fittings, steam generators, and equipment for refineries and chemical plants — its market includes several foreign countries besides the United States. Sales offices are maintained in the principal cities of America.

Nordberg — Houston

Appointment of **Stephen H. Reed** as Sales Engineer for **Nordberg Manufacturing Company** has been announced. Reed will make his headquarters at **Houston, Texas** and will work under the direction of **Wayne Slife**, District Manager of Nordberg's Houston Sales Office.

Mr. Reed will place special emphasis on engine applications for gas and oil pipeline pumping stations and marine installations. He was formerly associated with Enterprise Engine and Machinery Company in San Francisco and recently served as District Manager of their Tulsa, Oklahoma office.

Maryland Shipbuilding

Two promotions have been announced by **Maryland Shipbuilding & Drydock Company, Baltimore, Md.**

Philip Myers, Jr. was appointed Assistant to the Executive Vice President. In this capacity he will serve as staff assistant to Wm. Purnell Hall, Executive Vice President.

John Markell, Jr. was appointed Manager of Sales of the Company's Industrial Products Division. He will be responsible for continuing the development of the Division's growing power plant condenser activity and other industrial work.

A-C — South & Southwest

Newly assigned as representatives to sales offices in **Allis-Chalmers Industries Group** are the following:

Ralph J. Grutsch, Jr., Washington, D. C.; **Maynard W. Thompson**, Miami, Florida; **Norbert H. Van Laanen**, Houston, Texas, and **Edwin O. Young**, Charlotte, N. C.

Bigelow-Sanford — S. C.

Daniel Construction Company, Inc. of Greenville recently began construction of a new plant at **Calhoun Falls, South Carolina**, for **Bigelow-Sanford Carpet Co.**, the nation's second largest carpet manufacturer. Operation will begin during the second half of 1957, and the plant will employ some 700 persons.

The plant is scheduled to prepare carpet wool and manufacture yarn for use in Bigelow-Sanford carpets. The company has two other South Carolina plants, at Belton and Landrum.

Southern Nitrogen — Savannah

First stage of production was recently entered at **Southern Nitrogen Company's** $14 million nitrogen manufacturing plant at **Savannah, Georgia.** Plant is now producing ammonia and nitrogen manufacturing solutions and will soon be producing solid "Dixie" ammonium nitrate. Ammonia capacity is 250 tons a day.

Republic Flow — New Orleans

William H. Scurry has been appointed New Orleans district manager of the **Republic Flow Meters Co. Louisiana, Mississippi** and southern **Arkansas** will be served from the office at 4010 Eden St., New Orleans 25, La.

Southern Sales Service

THIS DIRECTORY of Southern & Southwestern Agents representing SPI advertisers is published as a service to plant engineering personnel and not as a part of the advertising contract. Please call our attention to any corrections or omissions. Only manufacturers' agents are listed. For branch offices or direct representatives please consult your Classified Telephone Directory.

These Manufacturers' Agents Can Serve You

ALABAMA

Birmingham

Belcher & Assoc., Inc.—Brown-Boveri Corp.

Brasfield Sales Engr. Co.—J. H. Holan Corp.

S. C. Bratton Sls. Engrs.—Sarco Co., Inc.

Clisby Associates—Sprague Electric Co.

Dixie Engineering—Dollinger Corp.

George S. Edwards—Dean Hill Pump Co.

J. W. Esheiman, Inc.—Air Pre-heater Corp.; Fisher Governor Co.

F. J. Evans Engr.—Webster Engr. Co.

Gauggel Engr. Co.—Leslie Co.; Thos. C. Wilson, Inc.

Heckeroth Engr. Sales—Magnetrol, Inc.; Powers Regulator Co.

James L. Howarth Co.—Allen-Bradley Co.

Ind. Furnace Constr. Co. — Cleaver-Brooks Co.

J. H. Judd—Buffalo Forge Co.

George O. Mabry Co.—Sterling Elec. Motors, Inc.

F. N. Manning — Dameron Enterprises

McConnell Sls. & Engr. Corp. —Cleaver-Brooks Co.; Western Precipitation Corp.

Fred S. Middleton Co.—Borden Metal Prod. Co.

Harry G. Mouat—Clarage Fan Co.

William H. Neville — L. J. Wing Mfg. Co.

Newell Equipment Co.—American Monorail Co.

Palmer & Lawrence— American Gilsonite Co.; Marley Co.; Orr & Sembower, Inc.; Prat-Daniel Corp. (Thermobloc)

Hugo A. Puls—Pacific Pumps, Inc.; Reliance Steel Prod. Co.

J. C. Trawick Co.—McQuay, Inc.

W. E. Veenschoten — Copes-Vulcan Div.

Willcox & Allen — Robvon Backing Ring Co.

Mobile

Air Cond. Engineers—Cyclotherm Div.

S. C. Bratton Sls. Engrs. — Sarco Co., Inc.

Bruckman & Co. — Leslie Co.

Mobile Elevator Co.—The J. B. Ehrsam & Sons Mfg. Co.

Frank A. Thomas Co.—The Annin Co.

Montgomery

Building Products, Inc. — Borden Metal Prod. Co.

ARKANSAS

Little Rock

J. L. Brown Sales Co.—Buffalo Forge Co.; Dollinger Corp.; Marley Co.; Sarco Co., Inc.

A. G. Crothers—J. J. Finnigan Co. Inc.

R. E. Hartenstein Co.—The J. B. Ehrsam & Sons Mfg. Co.

Hurston-Conaway, Inc. — Clarage Fan Co.

Mullins Engineering Co. — Prat-Daniel Corp. (Thermobloc)

Lynton L. Scharff—Manzel

Curtus H. Stout & Co.—Allen-Bradley Co.

North Little Rock

Mill & Mine Supply Co., Inc. —American Monorail Co.

C. O. Miller Co. — American Blower Corp.

Pine Bluff

M. L. Cooper—Subox, Inc.

DISTRICT OF COLUMBIA

Washington

Robert M. Austin—Cochrane Corp.

B & W Sales Co.—McQuay, Inc.

Wm. F. Goddard & Sons — Prat-Daniel Corp. (Thermobloc)

General Hydraulics Co. — L. J. Wing Mfg. Co.

Horner Elevator Co. — The J. B. Ehrsam & Sons Mfg. Co.

Lyle F. Howe Co. — Peerless Pump Div.

W. E. Kingswell, Inc.—Webster Engr. Co.

L. S. Luther & Company — Cleaver-Brooks Co.

T. W. McGuire Co.—Copes-Vulcan Div. (Vulcan); Prat-Daniel Corp. (Thermix)

Meleny Engineering Co. — Cochrane Corp.; Copes-Vulcan Div. (Copes); Foster Engineering Co.; Magnetrol, Inc.; Reliance Gauge Column Co.

J. C. Patterson, Jr. & Co. — C. H. Wheeler Mfg. Co.

Stone Heating & Ventilating Co.—Dollinger Corp.

Glegg Thomas — Clarage Fan Co.

Washington - Imperial Company—Sterling Elec. Motors, Inc.

FLORIDA

Clearwater

R. J. Clark Equipment — Cyclotherm Div.

J. J. Galleher — Edwin L. Wiegand Co.

Coral Gables

Raymond Boddie — American Blower Corp.

Daytona Beach

Hayward Equipment Corp.—Webster Engr. Co.

H. L. McMurry & Co.—McQuay, Inc.

Eustis

Earl Richardson Co. Inc. — Warner Lewis Co.

Jacksonville

Barnes Engr. Sls. Co. Inc.—Continental Gin Co.

Belcher & Assoc., Inc.—Brown-Boveri Corp.

Cameron & Barkley Co. — Blaw-Knox Co., Equip. Div. (Grating)

G. R. Copeland—Armco Drainage & Metal Prod. Co.

James M. Grady Co.—American Engr. Co.

T. C. Heyward—Combustion Engr., Inc.; C. H. Wheeler Mfg. Co.

Illingworth Engr. Co. — Cleaver-Brooks Co.; Marley Co.

George A. Israel, Jr.—American Gilsonite Co.

H. L. McMurry & Co.—Buffalo Forge Co.; McQuay, Inc.

Mayfield & Son—Elgin Softener Corp.

Robert P. Smith & Co.—Allen-Bradley Co.

S. D. West Co.—Leslie Co.; Thos. C. Wilson, Inc.

Lakeland

Toole Boiler & Welding Serv. Co. — E. Keeler Co.; Orr & Sembower, Inc.

Miami

Belcher Industries — Cleaver-Brooks Co.

George Brophy — American Blower Corp.

Ireland Equipment Co. — American Monorail Co.

Ralph P. Kelley & Assoc.—Dollinger Corp.

Lee-Smith Company — Allen-Bradley Co.

Bob Lynn—Clarage Fan Co.

H. L. McMurry & Co.—Buffalo Forge Co.; McQuay, Inc.

Jos. L. Middleton Co.—Marley Co.

Alexander Orr & Assoc.—Orr & Sembower, Inc.

Neptune Beach

W. F. Bloom — Fiske Bros Refining Co.

Orlando

Industrial Equipment Co. — L. J. Wing Mfg. Co.

McCarthy & Co. — Jefferson Union Co.; Kalamazoo Tank & Silo Co.

H. L. McMurry & Co. — McQuay, Inc.

G. R. MacNamara — Clarage Fan Co.

Ward Engineering Co.—Allen-Bradley Co.

S. D. West Co.—Leslie Co.

Southern Sales Service (Continued)

Plant City

Plant City Welding & Tank Co. — Reliance Steel Prod. Co.

St. Petersburg

H. K. Wilson—Copes-Vulcan Div. (Copes)

Tampa

Trice M. Bell — American Blower Corp.

Carter & VerPlanck—Ellison Draft Gage Co.

H. C. (Pat) Flanagan—Copes-Vulcan Div. (Vulcan); L. J. Wing Mfg. Co.

O. H. Howell Mfgrs. Agent, Inc.—Sarco Co., Inc.

J. K. Kessler & Assoc.—Lovejoy Flexible Coupling Co.

H. L. McMurry & Co.—Buffalo Forge Co.; McQuay, Inc.

Tampa Armature Works — Sterling Elec. Motors, Inc.

Tampco Supply Co. — Prat-Daniel Corp. (Thermobloc)

W. R. Ousley & R. B. Golt—Buffalo Forge Co.

West Palm Beach

J. P. Carroll—Goulds Pumps Inc.

GEORGIA

Atlanta

Abbey Steam Specialty Co.—Armstrong Machine Works

H. Kenneth Adams, Jr. — Geo. D. Roper Corp.

Allen & Vickers Engr. Co.—Cyclotherm Div.

Applied Engineering Co. — Cleaver-Brooks Co.; Lunkenheimer Co.; Manning, Maxwell & Moore, Inc.; Prat-Daniel Corp. (Thermobloc); Todd Shipyards Corp.

Applebee-Church, Inc.—Edwin L. Wiegand Co.

Atlas Elevator Co.—The J. B. Ehrsam & Sons Mfg. Co.

Belcher & Assoc., Inc. — Brown-Boveri Corp.

Boiler Equip. Serv. Co. — Cochrane Corp.; Foster Engineering Co.

W. R. Calverley — Allen-Bradley Co.; Subox, Inc.

Collins Bearings Co. — Fiske Bros. Refining Co.

F. J. Commagere — McQuay, Inc.

Lewis M. Crowe Co. — Magnetrol, Inc.

John A. Dodd Company — American Gilsonite Co.; Fairbanks, Morse & Co.; Superior Comb. Ind., Inc.

F. J. Evans Engr. Co. — Webster Engr. Co.

Ezell Equipment Co.—Blackmer Pump Co.

R. L. Fulghum Co. — Thomas Flexible Coupling Co.

The Gearhart Company — Sprague Electric Co.

Alfred Halliday Co.—Dean Hill Pump Co.

Carl Erick Johnson — Prat-Daniel Corp. (Thermix)

Steve C. May—Elgin Softener Corp.; Warren Steam Pump Co.

McBurney Stoker & Equip. Co. —Copes-Vulcan Div.

H. Clay Moore & Assoc. — Sturtevant Div.

Paul H. Nichols & Co.—Pittsburgh Piping & Equip. Co.; Riley Stoker Corp.

Spotswood Parker & Co. — Ellison Draft Gage Co.; Orr & Sembower, Inc.; Reliance Gauge Column Co.; Thos. C. Wilson Co.

C. T. Pottinger & Co. — Clarage Fan Co.

J. W. Rockwell—Buffalo Forge Co.

Rumbold & Co. Inc. — Cyclotherm Div.

Earl F. Scott & Co.—Leslie Co.

Evans L. Shuff & Assoc. Inc. — Buell Engineering Co.; Detroit Stoker Co.; Graver Water Cond. Co.; Pacific Pumps, Inc.

J. M. Smither & Co.—Fisher Governor Co.

Ward K. Stallings Co.—The Annin Co.

George E. Stinsman & Assoc. —Sterling Elec. Motors, Inc.

W. D. Taulman Assoc.—Byron Jackson Pumps, Inc.; Chapman Valve Mfg. Co.; Foster Wheeler Corp.

John F. Templeton Co. — Sarco Co., Inc.

Thermal Engr. Co. — Marley Co.

E. A. Thornwell, Inc.—Borden Metal Prod. Co.

Tri-State Utility Products — J. H. Holan Corp.

Will Corp. of Georgia—Dollinger Corp.

Decatur

Abernathy-Thomas Engr. Co. —Leslie Co.

Lambert Engineering Co. — Everlasting Valve Co.

St. Simons Island

Roy C. Crumbliss — Foster Engineering Co.; Leslie Co.

Savannah

Schirm Supply & Specialty Co. — Reliance Steel Prod. Co.

Stonewall

Guy Mankin — L. J. Wing Mfg. Co.

KANSAS

Kansas City

M. A. Disney—Dollinger Corp.

Herbert F. Zeigler, Jr. — Sterling Elec. Motors, Inc.

Mission

Hesler Co.—Prat-Daniel Corp. (Thermix)

Wichita

Economy Equipment Co. — Magnetrol, Inc.; Reliance Gauge Column Co.; Webster Engr. Co.

Heaven Engr. Co. — McQuay, Inc.; Orr & Sembower, Inc.

Smith Steam Specialty Co., Geo. Foulds Co.—Sarco Co., Inc.

Sullivan-Mears Co.—Dollinger Corp.; Graver Water Cond. Co.

KENTUCKY

Fern Creek

George Parnson — Ellison Draft Gage Co.

J. Zimmerman—Fisher Governor Co.

Lexington

Brock-McVey Co. — Cleaver-Brooks Co.

Louisville

The Abbott Company — Magnetrol, Inc.

Cardinal Carryor Co.—American Monorail Co.

Comley-Bushfield Co. — E. Keeler Co.

Consolidated Engr. Sls. Co.—Sarco Co., Inc.

Allan K. Cook Co. — Fisher Governor Co.

Fletcher Sales Co. — Cyclotherm Div.

Alfred Halliday Co. Inc. — Dean Hill Pump Co.

Halmar and Co. — Orr & Sembower, Inc.

Jay Instrument & Specialty Co.—Mason-Neilan Div.

F. W. Jenike Co. — Prat-Daniel Corp. (Thermobloc)

H. M. Lutes—Buffalo Forge Co.

George Parnson—Ernst Water Column & Gage Co.

Rietze & Co.—Allen-Bradley Co.

Steel Fabricators, Inc. — Borden Metal Prod. Co.

Tech. Prod. Serv. & Sls. — McQuay, Inc.

Frederick Wehle—Continental Gin Co.

LOUISIANA

Baton Rouge

Engineering Sales Co. — Dollinger Corp.

Moody-Price, Inc. — The Annin Co.

Lake Charles

A. M. Lockett & Co. Ltd. — Babcock & Wilcox Co., Sturtevant Div.; Worthington Corp.

New Orleans

Acme Welding & Supply Co. —Dameron Enterprises, Inc.

Adair-Merrill Co. — McQuay, Inc.

Felix L. Alcus — Clarage Fan Co.

Allied Sls. & Serv. Inc. — Durametallic Corp.

Arlexco Company, Inc.—Prat-Daniel Corp. (Thermix)

Pierre E. Bagur, Jr., & Co.—Prat-Daniel (Thermobloc)

Betz Engr. Sales Co.—Elgin Softener Corp.; U. S. Elec. Motors; Warren Steam Pump Co.

Frank Birdsong — Sarco Co., Inc.

John H. Carter Co.—Fisher Governor Co.; Reliance Gauge Column Co.; Republic Flow Meters Co.; Thos. C. Wilson, Inc.

Coastal Engineering Corp.—Graver Water Cond. Co.; Mason-Neilan Div.

Walter S. Cooke — American Blower Co.; Ross Heat Exchanger Div.

Creole Engineering Co. — Ernst Water Column & Gage Co.; Leslie Co.

L. Villere Cressy — Powers Regulator Co.

Cutler Equip. Co. — Brown-Boveri Corp.; C. H. Wheeler Mfg. Co.

Joseph V. D'Amico, Jr. — Armstrong Machine Works

H. R. Davies Sls. & Engr. — Robvon Backing Ring Co.

Devlin Bros. — Buffalo Forge Co.; Orr & Sembower, Inc.

John V. Dugan — Pittsburgh Piping & Equip. Co.

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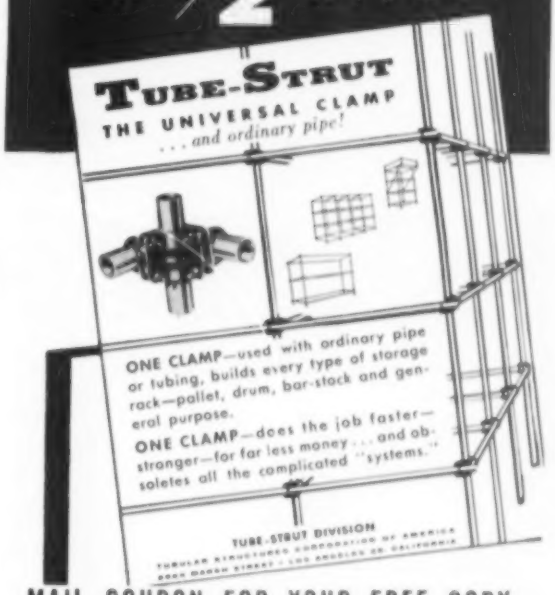
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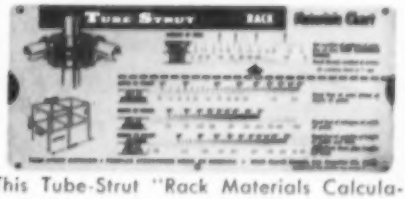

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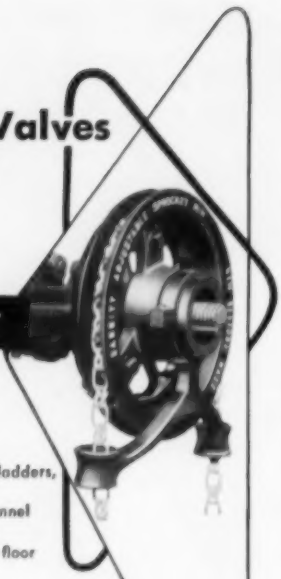

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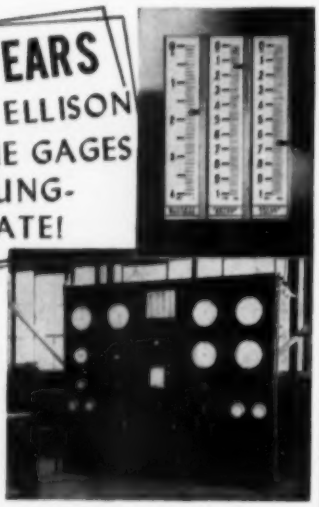

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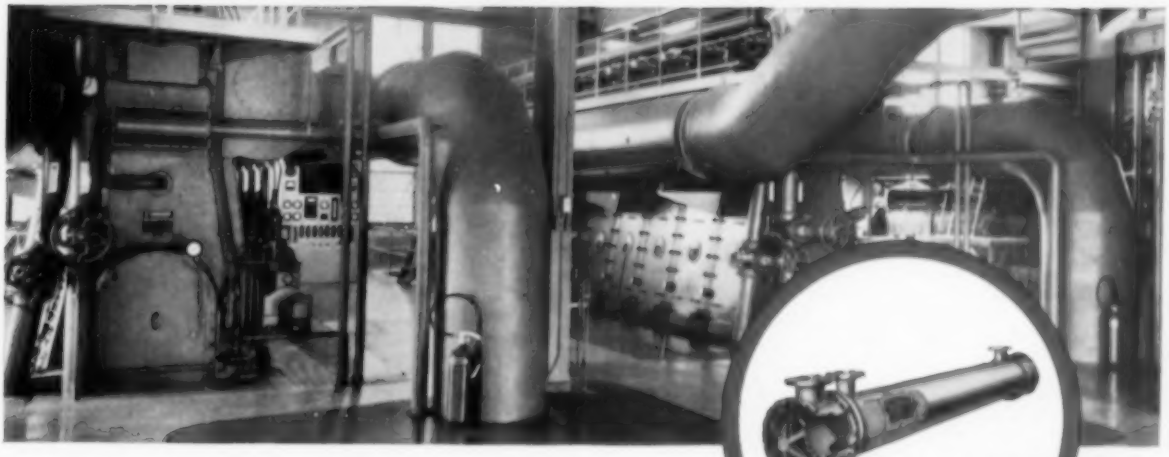

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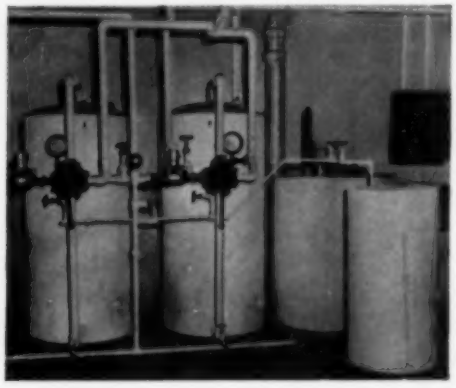

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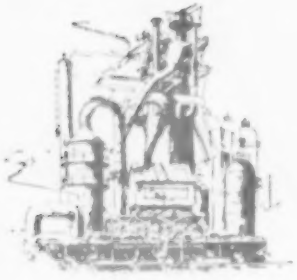

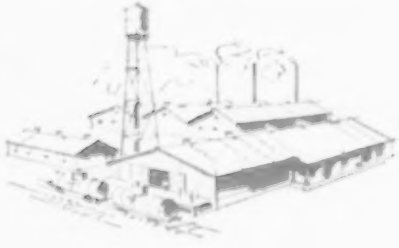

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